160

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DENVER, COLORADO

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TRADE NAME	MODEL	SET AND FOLDER No.
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Emerson	703B (Ch. 120097-B)	160-4
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Philharmonic	5000, 5200, 5201, 5250, 5400, 5401, 5450, 5600, 5601, 5650, 5700, 5700RT, 5701, 5750, 5750RT, 5800 Tel. Rec.	160-9
RCA Victor	16T152 (Ch. KCS47E) Tel. Rec.	160-10
Silvertone	144 (Ch. 478.312 & Radio Ch. 478.240) Tel. Rec.	160-11
Sylvania	511B, H, M, 512BR, CH, GR, RE, YE (Ch. 1-601-1)	160-12
Westinghouse	H-653K24 (Ch. V-2202-2 & V-2210-1) Tel. Rec.	160-13

ADMIRAL CHASSIS 5L2

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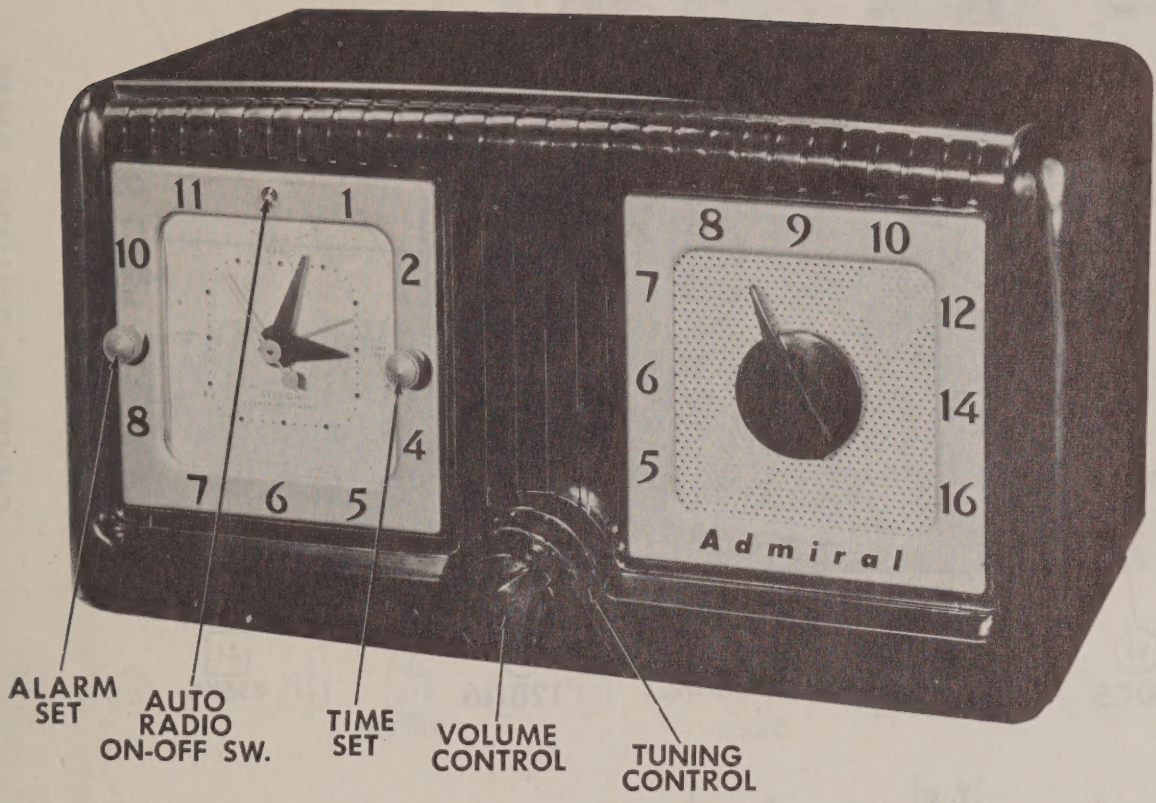
ADMIRAL CHASSIS 5L2



ADMIRAL CHASSIS 5L2

ADMIRAL MODEL 5L21

TRADE NAME	Admiral Models 5L21, 5L22, 5L23 (Ch. 5L2)
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago, Ill.
TYPE SET	AC Operated Superheterodyne Receiver with Electric Clock
TUBES (FIVE)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING .25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

ALIGNMENT INSTRUCTIONS

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	250MMF	High side to rear stator of tuning gang. Low side to B-.	455KC (400~Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output.
2.	"	"	1620KC	"	"	A5	Adjust for maximum output.
3.		Loop	1400KC	Tune for max. output.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		ADMIRAL PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det-AVC-AF Amp.	12AV6	12AV6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	ADMIRAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	50	150	67A22-1	PRS150/50-30		BRD5315A		TVA-2450	Filter (Red)
B	30	150							Filter (Yellow)
C2	47		65C6-79	SI47	D6-470		GP1K-470	5GA-Q47	Osc. Grid Cap.
C3	.05	400	64B1-22	P488-05	DF-503	PTE4S5		4TM-S5	Tuning Cap. Isolation
C4	.1	200	64B1-30	P288-1	DF-104	PTE4P1		2TM-P1	AVC Filter
C5	220		65C6-90	SI220	D6-221	5W5T25	GP2K-221	5GA-T22	Diode RF Filter
C6	.01	400	64B1-25	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C7A	.005								Audio Coupling
B	250		♦ 63A5-4		♦ PC-70				AF Amp. Plate Bypass
C									Audio Output Grid
C8	.02	400	64B1-24	P488-02	DF-203	PTE4S2		4TM-S2	Audio Output Plate
C9	.047	400	65A13-5	P488-047		PTE4S5		4TM-S47	Line Filter
C10	.1	200	64B1-30	P288-1		PTE4P1		2TM-P1	Line Isolation

♦ Items C7A, C7B, C7C, R6, R7 are combined in one unit.
When replacing items separately, C7B and C7C should total 250MMF

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	ADMIRAL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	1Meg	½	75B1-46	Q13-137	AG-63-Z	BSK-70-S	Volume Control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions.
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R1A per instructions.

RESISTORS

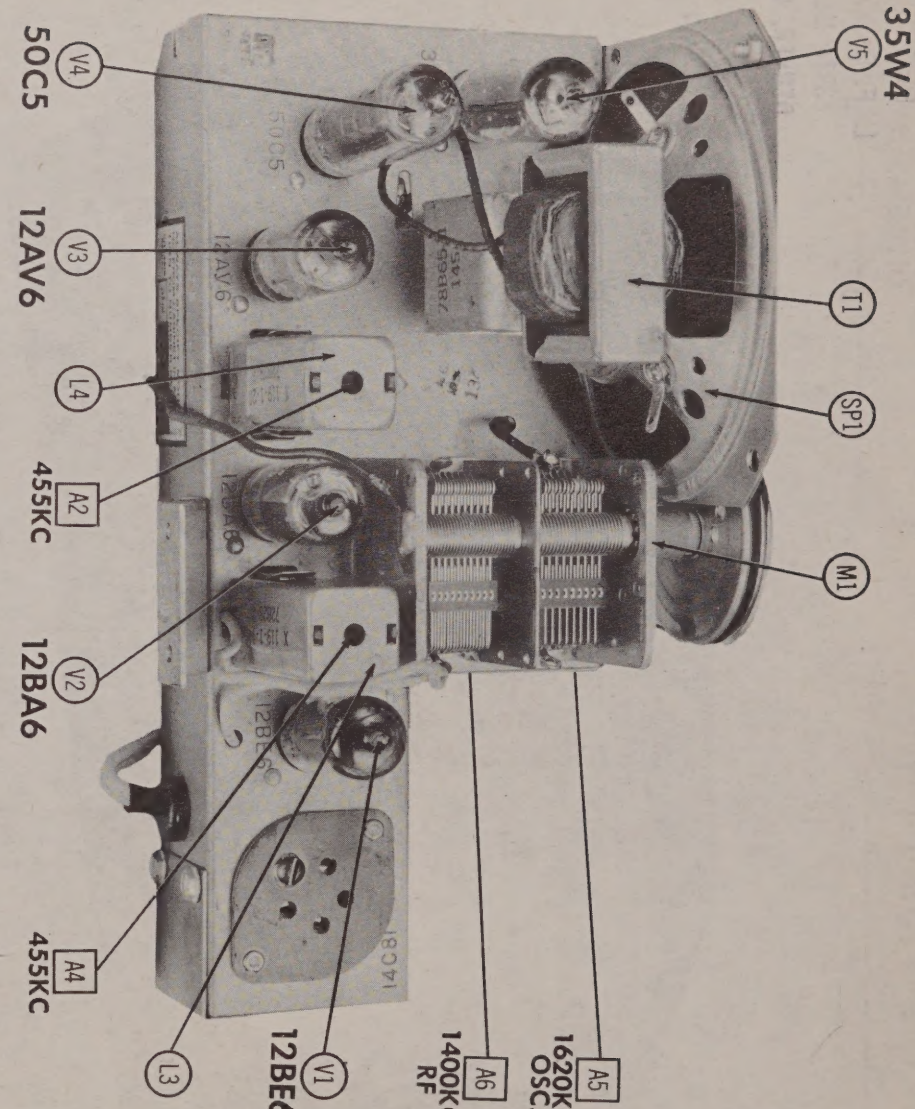
ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	ADMIRAL PART No.	IRC PART No.		
R2	22KΩ	½	60B8-223		Mixer Grid	
R3	100Ω	½	60B8-101	BTS-100	IF Amp. Cathode	
R4	1Meg	½	60B8-105	BTS-1Meg	AVC Network	
R5	4.7Meg	½	60B8-475	BTS-4.7Meg	AF Amp. Grid	
R6A	500KΩ	½	63A5-4		AF Amp. Plate	See note ♦
B	500KΩ	½			Output Grid	See note ♦
R7	150Ω	½	60B8-151	BTS-150	Output Cathode	
R8	33Ω	1	60B28-3		Surge Limiter	
R9	560Ω	2	60B20-561	BTB-560	Filter	

Note ♦ Items R6, R7, C7A, C7B, C7C are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ADMIRAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2.7KΩ	3.1Ω	200Ω	.6Ω	Part of 78B65-1 Part of ② 78B65-2	A-3876 ①	A-2928 ①	RO-2 ①	① Bend Mounting Tabs down, file out slots and mount on original bracket. ② Alternate Transformer

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

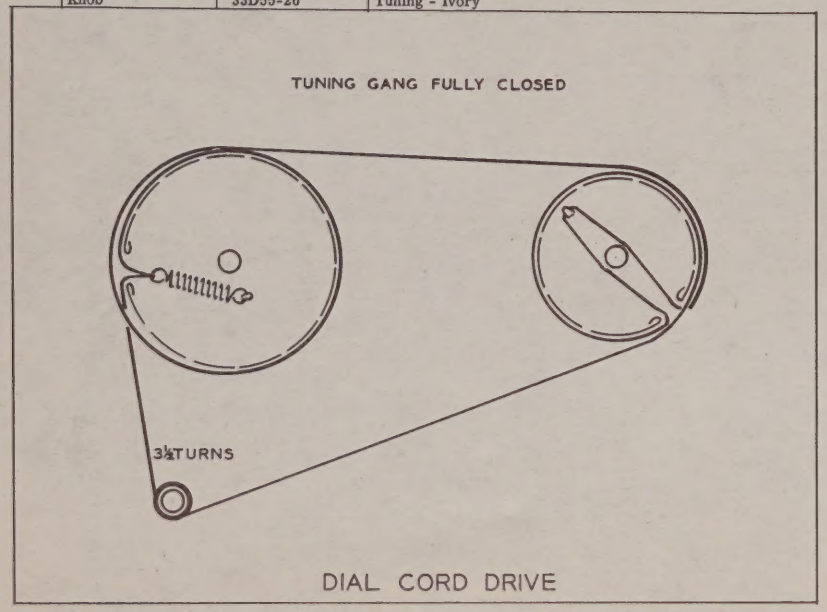
ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	ADMIRAL PART No.	JENSEN PART No.	QUAM PART No.	
SP1A SP2	PM	3.1Ω	78B65-1 78B65-2 ①			① Alternate Speaker
	CONE DIA.	V. C. DIA.				
SP1B	4"	9/16"				

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	ADMIRAL PART No.	MERIT PART No.	IRC PART No.	
L1	Loop Ant.	.1Ω		69C143-1			
L2	Osc. Coil	6.2Ω		69A52-4			Tap at 5.7Ω
L3	Input IF	17.5Ω	17.5Ω	72B28-7			
L4	Output IF	17.5Ω	17.5Ω	72B28-7			

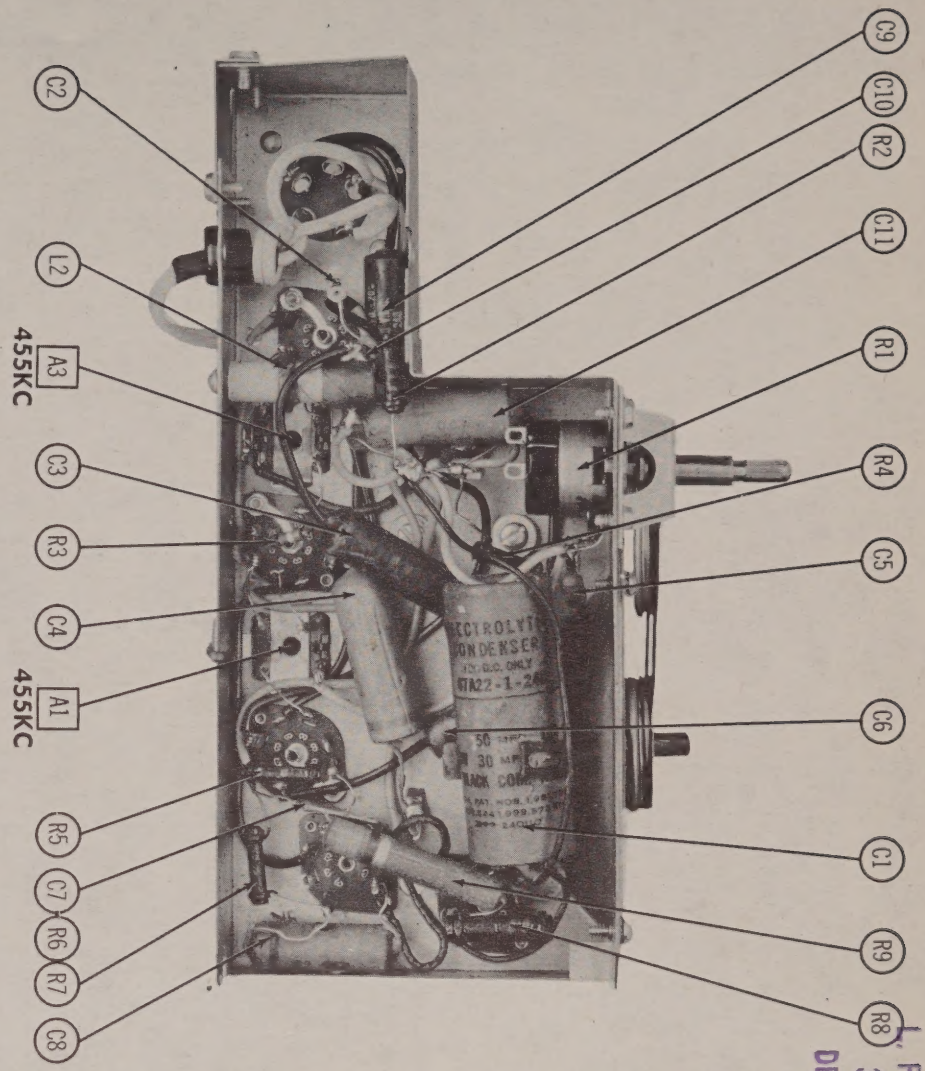
MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M1	2 Gang Var. Cap.	68B39	(24-326MMF, 17-252MMF)
	Clock	91C6-1	
	Glass	91C6-13	Window for Clock
	Cabinet	34D43-1	Ebony - Model 5L21
	Cabinet	34D43-2	Mahogony - Model 5L22
	Cabinet	34D43-3	Ivory - Model 5L23
	Knob	33D55-28	Volume - Ebony
	Knob	33D55-32	Volume - Maroon
	Knob	33D55-29	Volume - Ivory
	Knob	33D55-24	Tuning - Ebony
	Knob	33D55-23	Tuning - Maroon
	Knob	33D55-26	Tuning - Ivory



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



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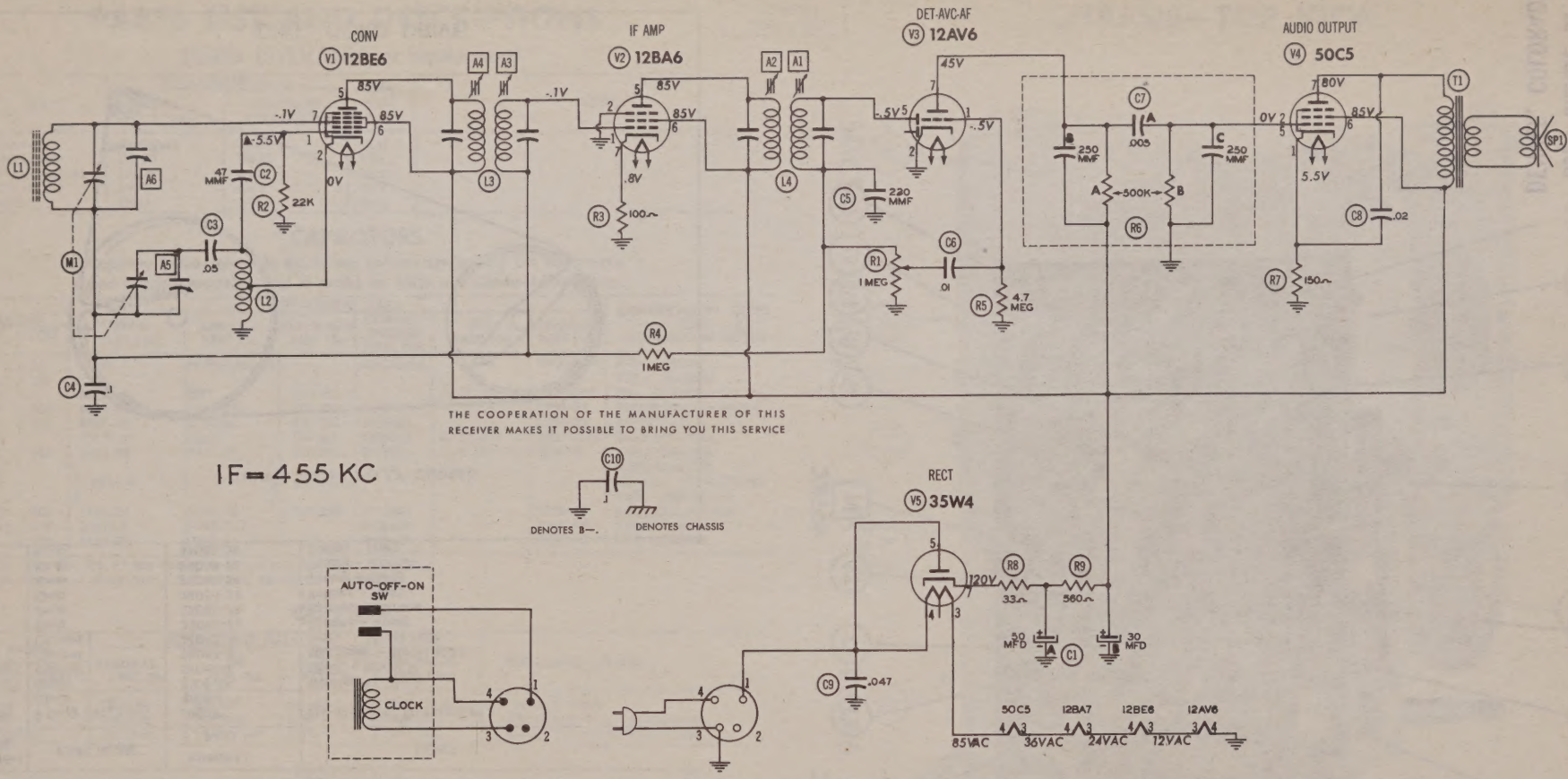
ADMIRAL MODEL 5L21

ADMIRAL MODEL 5L21



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.5Ω	12Ω	24Ω	†600Ω	†600Ω	2Meg
V 2	12BA6	2Meg	0Ω	24Ω	36Ω	†600Ω	†600Ω	100Ω
V 3	12AV6	4.7Meg	0Ω	12Ω	0Ω	1Meg	Inf.	†500KΩ
V 4	50C5	150Ω	500KΩ	36Ω	86Ω	500KΩ	†600Ω	†800Ω
V 5	35W4	Inf.	†33Ω	86Ω	121Ω	121Ω	103Ω	40KΩ

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 7 OF V5

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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160-1

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

CAPEHART CHASSIS
CT-27, CT-38, CT-45 (Ch. Series CX-33DX)

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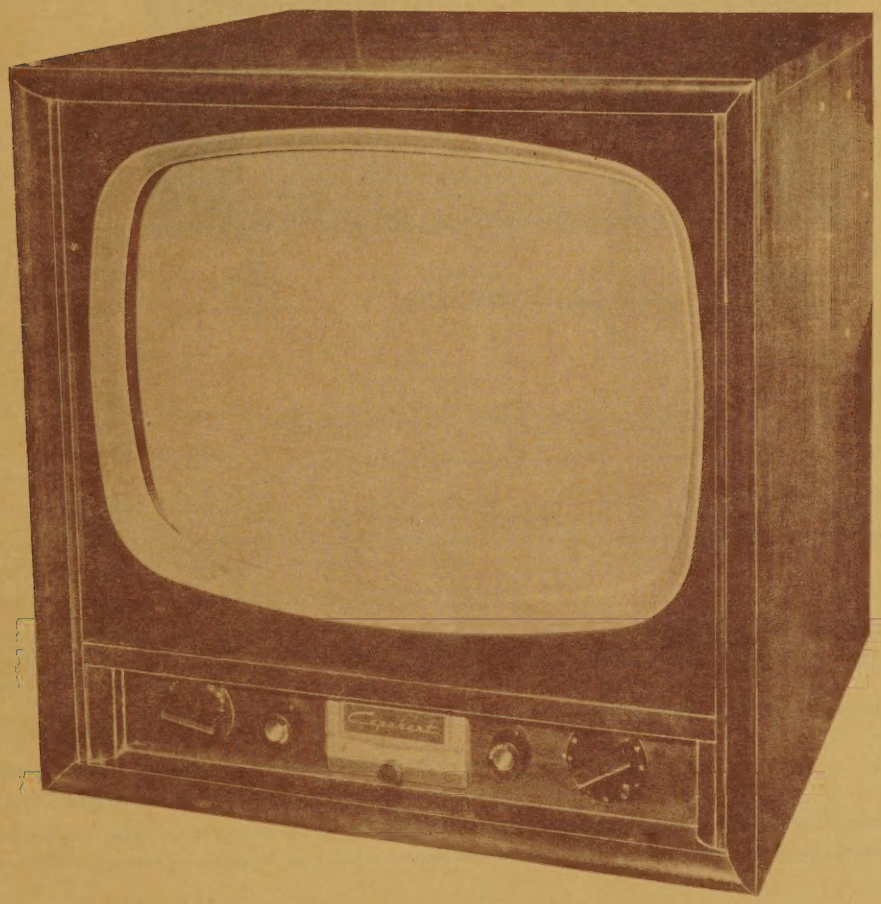

MODEL 331-MX

CAPEHART CHASSIS
CT-27, CT-38, CT-45 (Ch. Series CX-33DX)

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DATE 2-52 SET 160 FOLDER 2

PHOTOFACT* Folder

*TRADE MARK

CAPEHART CHASSIS
CT-27, CT-38, CT-45 (Ch. Series CX-33DX

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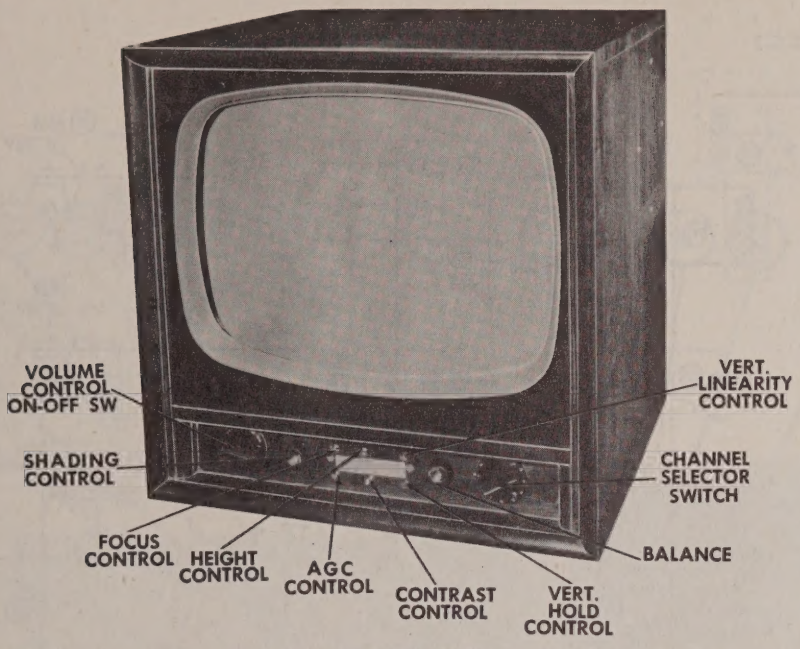

Capehart Model 331MX

TRADE NAME

CAPEHART: The CX-33DX chassis has 6 production run versions. The production chassis and production run or "Series" numbers are stamped on both the front and rear aprons of the chassis. Example: A chassis stamped "CT-27-3" is the CT-27 version of the CX-33DX chassis-Production run "3". There have been two production runs of this chassis, those coded with a "-2" are the original production. The chassis are classified as follows.

MODEL	CHASSIS
1T17MX	CT-27
2T20MX	CT-38
3C17MX, 319MX, BX, 320MX, BX,	CT-27
321AMX, ABX, 322RAMX, RABX	CT-27
324BX, 325AFX, 326MX	CT-27
331MX, BX,	CT-38
335MX, BX, 336CX, FX	CT-38
338MX	CT-45
339MX	CT-38
340X	CT-45
341X	CT-45

MANUFACTURER Capehart - Farnsworth Corp., Fort Wayne Ind.

TYPE SET Television Receiver

TUBES Twenty Three

POWER SUPPLY 110-120 Volts AC-60 Cycle RATING 2.3Amp. @ 117 Volts AC

TUNING RANGE Channels 2 thru 13

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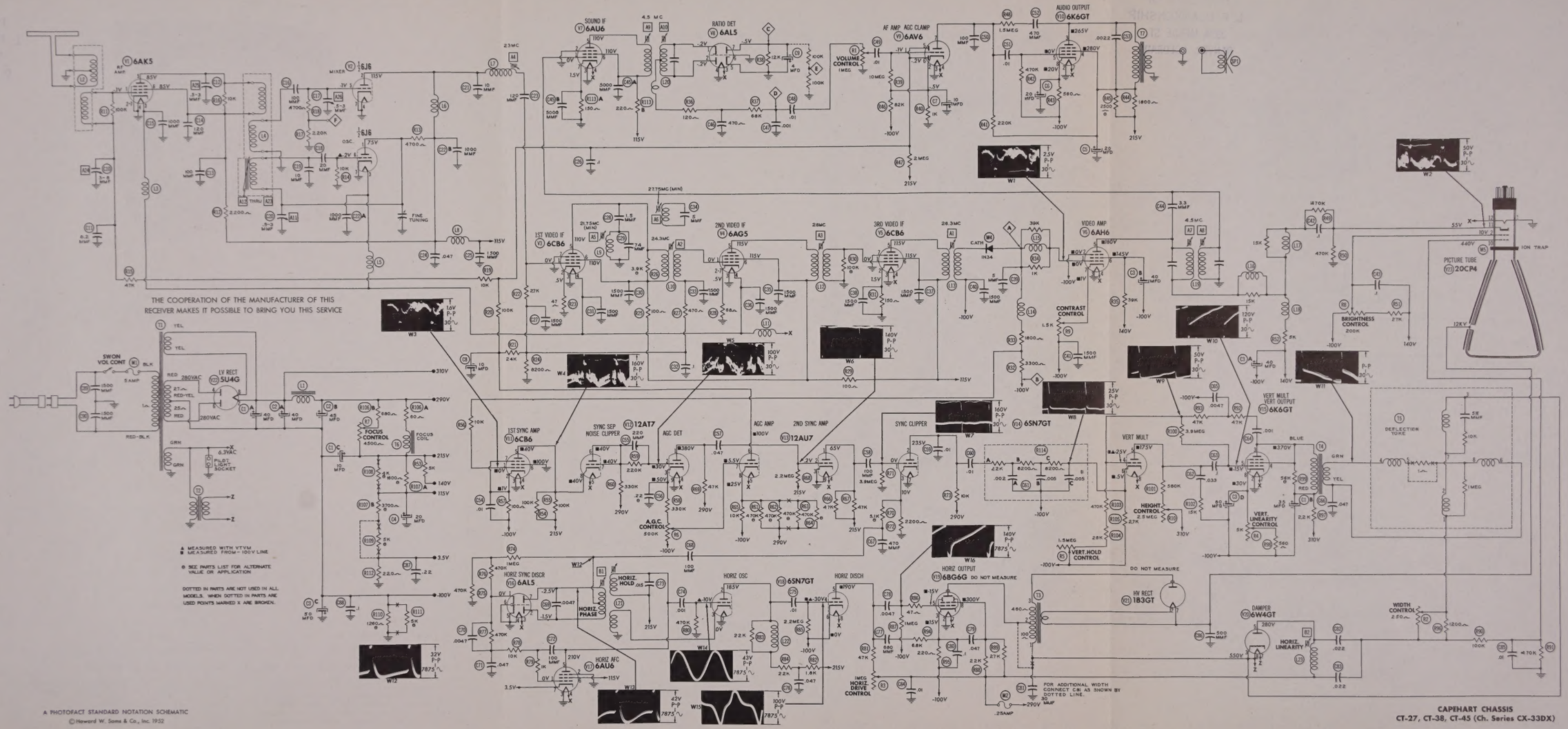
DATE 2-52 SET 160 FOLDER 2

CAPEHART CHASSIS
CT-27, CT-38, CT-45 (Ch. Series CX-33DX)


CAPEHART CHASSIS
CT-27, CT-38, CT-45 (Ch. Series CX-33DX)
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
V1 6AK5 RF AMP
MIXER V2 1/2 6J6
OSC 1/2 6J8
SOUND IF V7 6AU6
RATIO DET V8 6AL5
AF AMP AGC CLAMP V9 6AV6
AUDIO OUTPUT V10 6K6GT
1ST VIDEO IF V3 6CB6
2ND VIDEO IF V4 6AG5
3RD VIDEO IF V5 6CB6
VIDEO AMP V6 6AH6
1ST SYNC AMP V11 6CB6
SYNC SEP NOISE CLIPPER V13 12AT7
AGC DET
AGC AMP
2ND SYNC AMP V13 12AU7
SYNC CLIPPER
VERT MULT V14 6SN7GT
VERT MULT VERT OUTPUT V15 6K6GT
HORIZ SYNC DISCR V16 6AL5
HORIZ AFC V17 6AU6
HORIZ OSC
HORIZ DISCH V18 6SN7GT
HORIZ OUTPUT V19 6BG6G DO NOT MEASURE
HV RECT V21 1B3GT
DAMPER V20 6W4GT
PICTURE TUBE V22 20CP4
ION TRAP
DEFLECTION YOKE
LV RECT V22 5U4G
SW ON VOL CONT
FUSE 5 AMP
PILOT LIGHT SOCKET
FOCUS CONTROL
FOCUS COIL
CONTRAST CONTROL
BRIGHTNESS CONTROL
HEIGHT CONTROL
VERT. LINEARITY CONTROL
VERT. HOLD CONTROL
HORIZ. HOLD
HORIZ. PHASE
HORIZ. DRIVE CONTROL
HORIZ. LINEARITY
WIDTH CONTROL
A.G.C. CONTROL
VOLUME CONTROL
FINE TUNING
4.5 MC
23MC
27.75MC (MIN)
21.75MC (MIN)
24.3MC
28MC
26.3MC
W1
W2
W3
W4
W5
W6
W7
W8
W9
W10
W11
W12
W13
W14
W15
W16
▲ MEASURED WITH VTVM
■ MEASURED FROM -100V LINE
● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN.
FOR ADDITIONAL WIDTH CONNECT C81 AS SHOWN BY DOTTED LINE.
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CAPEHART CHASSIS
CT-27, CT-38, CT-45 (Ch. Series CX-33DX)

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CHASSIS TOP VIEW

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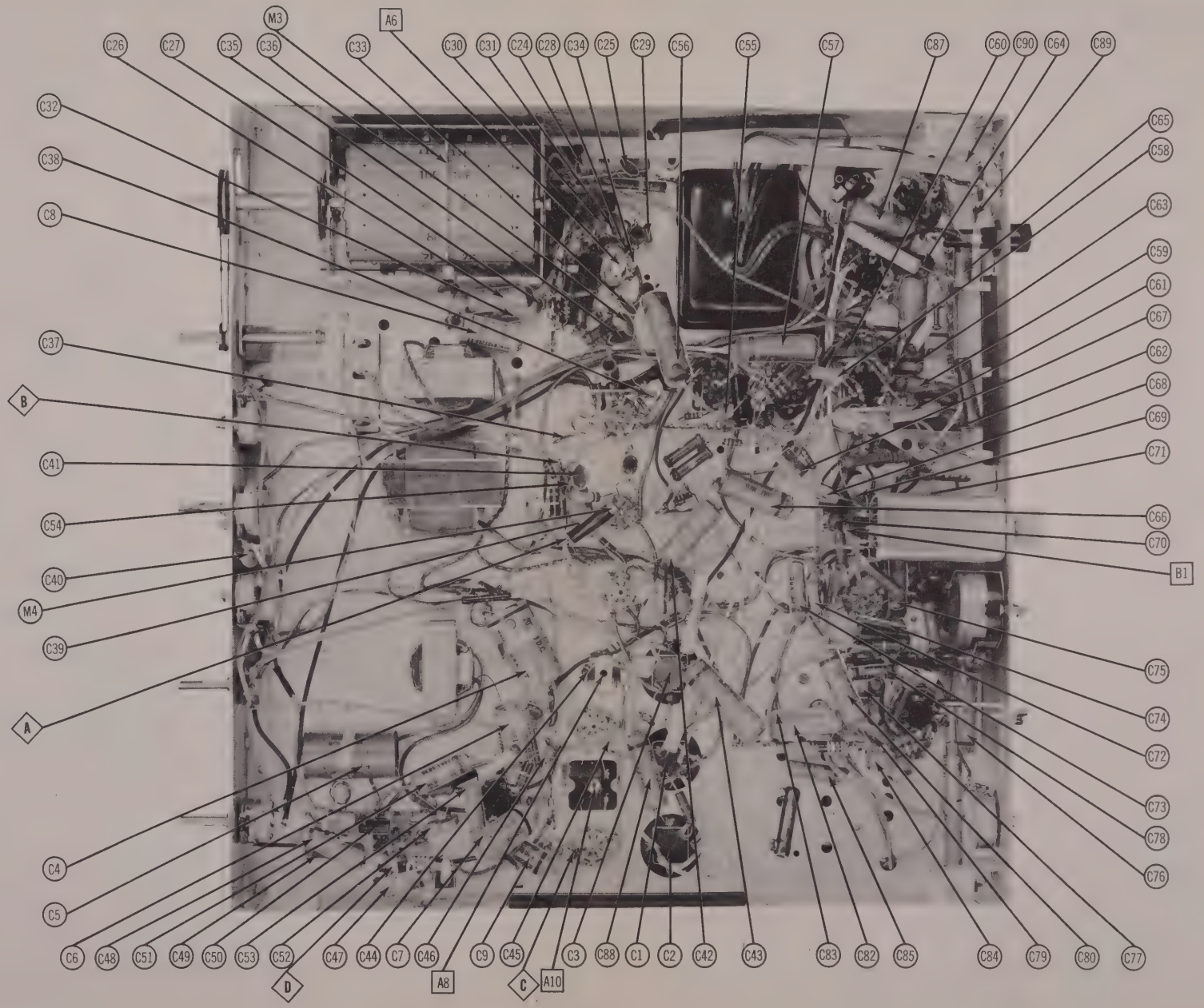

CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

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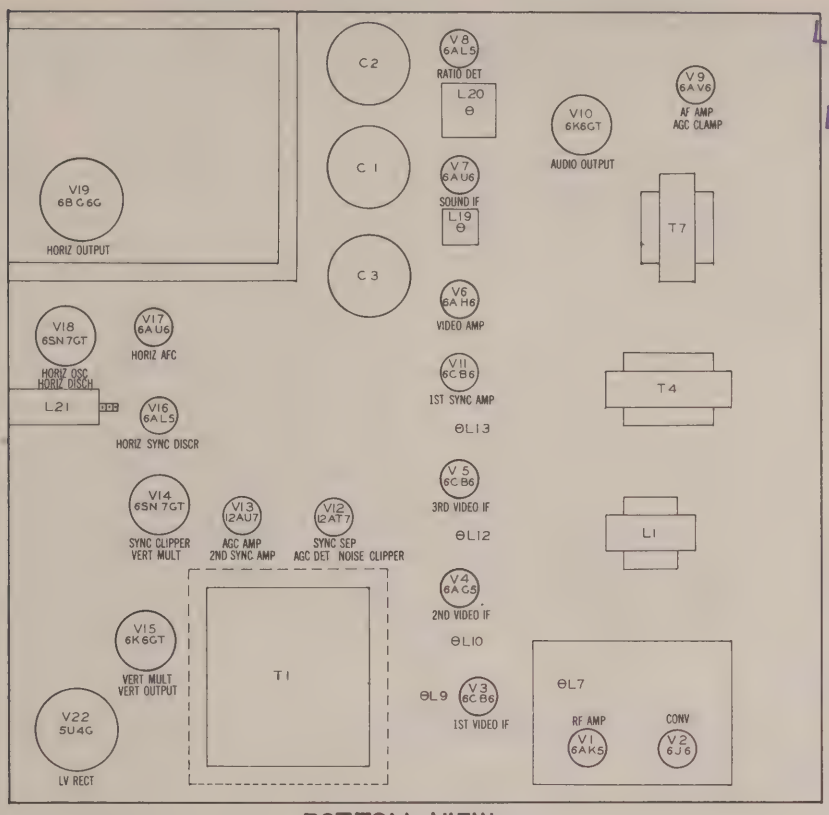
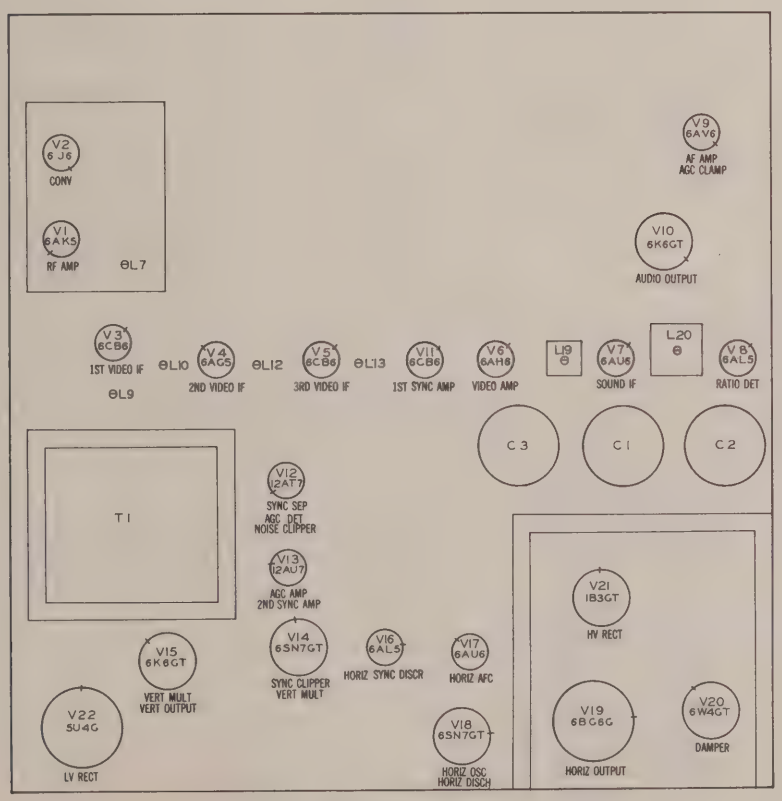


BOTTOM VIEW



TOP VIEW

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube, (V18), from its socket.

VIDEO IF ALIGNMENT

Remove the converter tube, (V2), and replace it with a 6J6 which has pin 1 removed. This will disable the local oscillator and prevent the possibility of erroneous indications.
Turn the AGC control to fully clockwise.
Connect the negative lead of a 3 volt battery to the ungrounded lead of C8, and connect the positive lead to chassis.
During video IF alignment the common lead of the VTVM is connected to approximately 100 volts with respect to chassis. Avoid touching or grounding the VTVM case.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	26.3MC (unmod)	Any	DC probe to point (A). Common to point (B).	A1	Adjust for maximum deflection.
2.	"	"	24.3MC	"	"	A2	"
3.	"	"	26MC	"	"	A3	"
4.	"	"	23MC	"	"	A4	"
5.	"	"	21.75MC	"	"	A5	Adjust for MINIMUM deflection.
6.	"	"	27.75MC	"	"	A6	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (V2). Low side to chassis.	25MC (10MC swp.)	21.75MC 22.75MC 25.5MC 26.25MC	Any	Vert. amp. to Point (A). Low side to chassis.		Check for response curve similar to Fig. 1. If necessary retouch A1 thru A4 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point (C) to chassis. The junction of these two resistors is alignment point (F) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	1500MMF	High side to pin 1, (grid) of 6AH6, (V6). Low side to chassis.	4.5MC (unmod)	Any	DC probe to point (C). Common to chassis.	A7, A8, A9	Adjust for maximum deflection.
9.	"	"	"	"	DC probe to point (D). Common to point (E).	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	1500MMF	High side to Pin 1, (grid) of 6AH6, (V6). Low side to chassis.	4.5MC (450KC swp)	4.5MC	Any	Vert. amp. to Point (C). Low side to chassis.	A7, A8 A9	Disconnect stabilizor capacitor C9. Adjust for maximum amplitude and symmetry as per Fig. 2.
9.	"	"	"	"	"	Vert. amp. to Point (D). Low side to chassis.	A10	Reconnect C9. Adjust A10 so 4.5MC occurs at center of crossover lines as per Fig. 3. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Complete oscillator alignment may not be necessary.
If the oscillator seems to be off frequency approximately the same amount for a majority of the channels, it may be possible to correct them in one step using A11. It should be noted that this is an all channel oscillator circuit adjustment and should not be adjusted for any individual channel.
If adjustment of A11 will not bring all channels well within the range of the fine tuning control, it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel strip adjustments are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	See Fig. 5	Across antenna terminals.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp. to Point (A). Low side to chassis.	A12	Adjust to place sound marker in trap "notch" as shown in Fig. 4. The video marker should fall between 45 & 60%.
			207MC (10MC swp)	205.25MC 209.75MC	12		A13	
			201MC (10MC swp)	199.25MC 203.75MC	11		A14	
			195MC (10MC swp)	193.25MC 197.75MC	10		A15	
			189MC (10MC swp)	187.25MC 191.75MC	9		A16	
			183MC (10MC swp)	181.25MC 185.75MC	8		A17	
			177MC (10MC swp.)	175.25MC 179.75MC	7		A18	
			85MC (10MC swp.)	83.25MC 87.75MC	6		A19	
			79MC (10MC swp.)	77.25MC 81.75MC	5		A20	
			69MC (10MC swp.)	67.25MC 71.75MC	4		A21	
			63MC (10MC swp.)	61.25MC 65.75MC	3		A22	
			57MC (10MC swp.)	55.25MC 59.75MC	2		A23	

ALIGNMENT INSTRUCTIONS (CONT.)

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3924 MEADE ST.
DENVER, COLORADO

AGC ADJUSTMENT

Turn the set on and tune in the strongest available TV station. Turn the contrast control to maximum, (fully clockwise). If the signal is strong turn the AGC control clockwise until the picture begins to bend at the top, then counter-clockwise just enough to remove the sync. distortion. If intercarrier buzz is objectional reduce the control just enough to remove the buzz. If the signal is weak, turn the AGC control counter-clockwise until the picture begins to appear washed out, then rotate the control clockwise until the picture returns to normal. If more than one station is available in the area it may be necessary to make a compromise adjustment to obtain best results on all stations.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	See Fig. 5	Across antenna terminals.	207MC (10MC swp)	205.25MC 209.75MC	12	Vert. amp. thru 10KΩ to Point F. Low side to chassis.	A24, A25 A26	Adjust for response curve similar to Fig. 6 with markers above 90%
12.	"	"	213MC (10MC swp)	211.25MC 215.75MC	13	"		Check all channels for response curve similar to Fig. 6. If markers fall below 70% on any channel, make compromise adjustment of A24, A25 and A26 with channel switch set for that channel. Recheck all channels to see that they have not been seriously effected.
			201MC (10MC swp)	199.25MC 203.75MC	11			
			195MC (10MC swp.)	193.25MC 197.75MC	10			
			189MC (10MC swp.)	187.25MC 191.75MC	9			
			183MC (10MC swp.)	181.25MC 185.75MC	8			
			177MC (10MC swp.)	175.25MC 179.75MC	7			
			85MC (10MC swp.)	83.25MC 87.75MC	6			
			79MC (10MC swp.)	77.25MC 81.75MC	5			
			69MC (10MC swp.)	67.25MC 71.75MC	4			
			63MC (10MC swp.)	61.25MC 65.75MC	3			
			57MC (10MC swp.)	55.25MC 59.75MC	2			

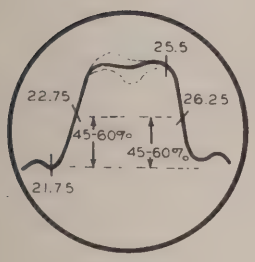


FIG. 1

FIG. 2

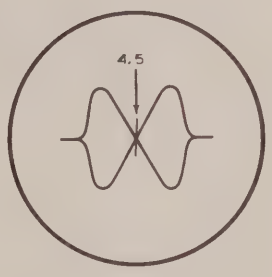


FIG. 3

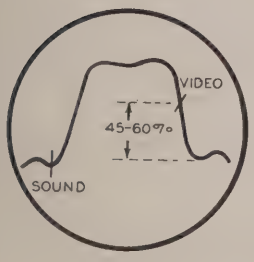
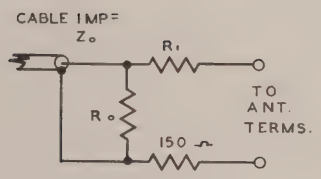


FIG. 4



Z_o	R_o	R_1
50Ω	56Ω	120Ω
72Ω	82Ω	110Ω
92Ω	110Ω	100Ω

FIG. 5

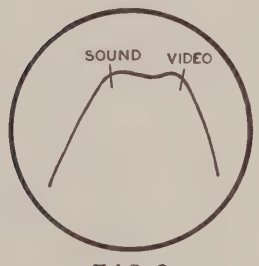
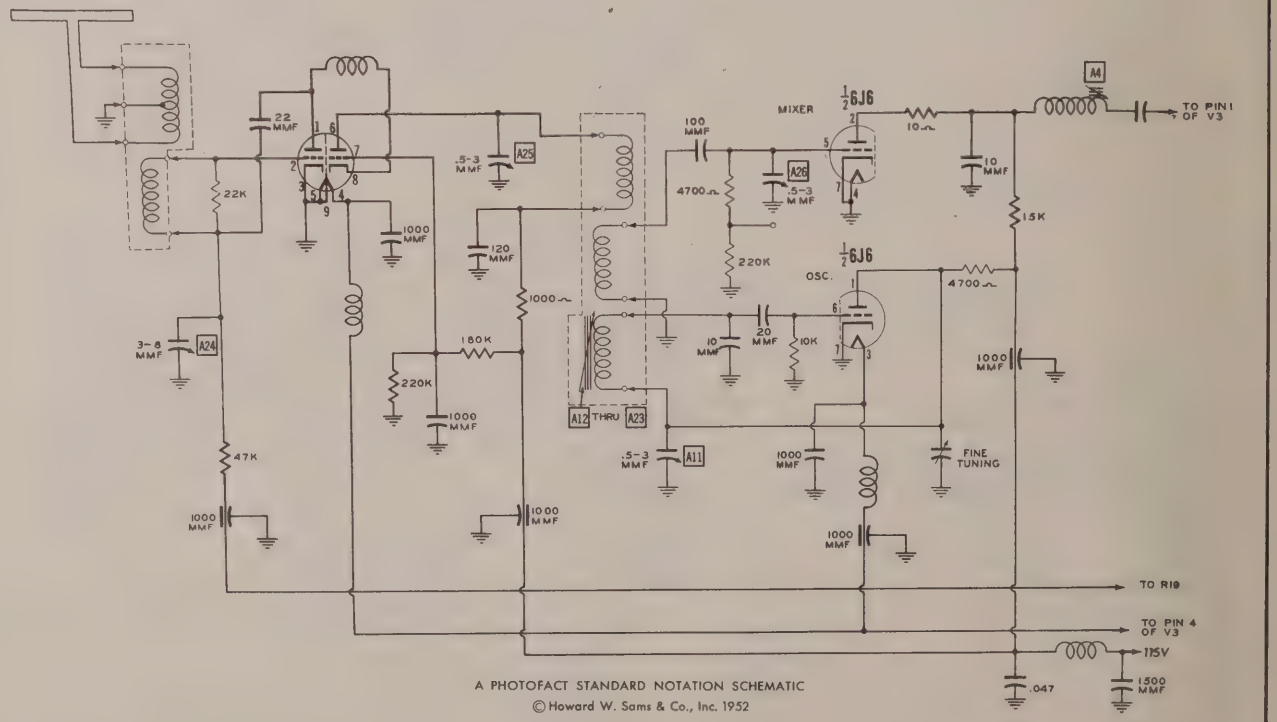


FIG. 6

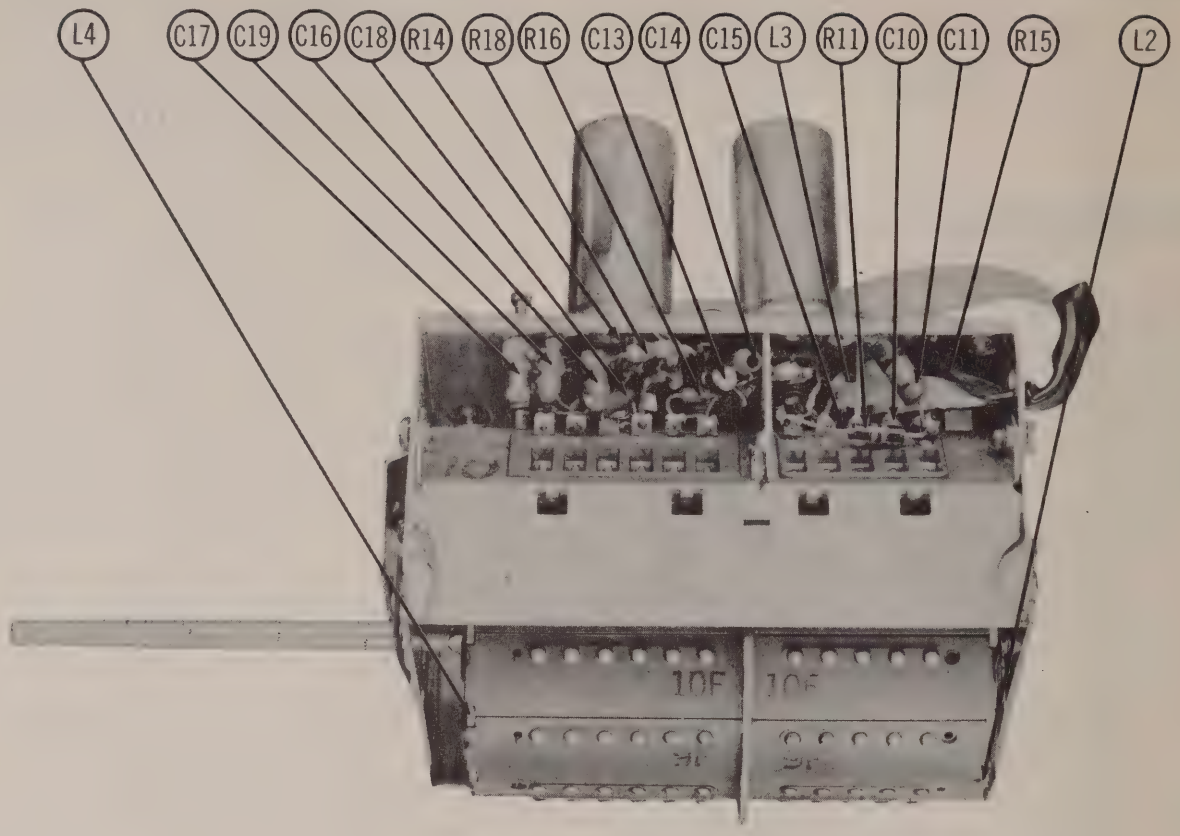
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AK5	190KΩ	0Ω	.1Ω	0Ω	†3.8KΩ	†3.8KΩ	0Ω		
V 2	6J6	†6.3KΩ	†1.6KΩ	.1Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6BC6	35KΩ	47Ω	0Ω	.1Ω	†1.8KΩ	†1.8KΩ	0Ω		
V 4	6AG5	8.7KΩ	68Ω	0Ω	.1Ω	†1.7KΩ	†1.7KΩ	68Ω		
V 5	6CB6	.5Ω	150Ω	0Ω	.1Ω	†1.6KΩ	†1.6KΩ	0Ω		
V 6	6AH6	■5KΩ	■0Ω	0Ω	.1Ω	†10KΩ	†44KΩ	■75Ω		
V 7	6AU6	2Ω	0Ω	0Ω	.1Ω	†1.9KΩ	†1.9KΩ	150Ω		
V 8	6AL5	INF	INF	.1Ω	0Ω	0Ω	0Ω	12KΩ		
V 9	6AV6	10Meg	1KΩ	0Ω	.1Ω	130KΩ	130KΩ	†220KΩ		
V 10	6K6GT	INF	0Ω	†2KΩ	†1.5KΩ	■470KΩ	INF	.1Ω	■560Ω	
V 11	6CB6	■13KΩ	■100Ω	0Ω	.1Ω	†50KΩ	0Ω	■100Ω		
V 12	12AT7	†47KΩ	†550KΩ	■830KΩ	.1Ω	.1Ω	†330KΩ	†330KΩ	†50KΩ	0Ω
V 13	12AU7	†24KΩ	†2.2Meg	0Ω	.1Ω	.1Ω	32KΩ	■130KΩ	■8KΩ	0Ω
V 14	6SN7GT	3.9Meg	†10KΩ	2.2KΩ	■1.5Meg	†650KΩ	■2.7KΩ	0Ω	.1Ω	
V 15	6K6GT	INF	0Ω	†2.6KΩ	†2.6KΩ	■5.3Meg	†63Ω	.1Ω	■2.2KΩ	
V 16	6AL5	940KΩ	1.5Meg	.1Ω	0Ω	0Ω	0Ω	1.5Meg		
V 17	6AU6	1.4Meg	0Ω	0Ω	.1Ω	†600Ω	†1.6KΩ	220Ω		
V 18	6SN7GT	470KΩ	†4.5KΩ	11Ω 1Meg	■2.2Meg	†210K	■0Ω	0Ω	.1Ω	
V 19	6BG6G	INF	0Ω	■220Ω	■7KΩ	■1Meg	†500Ω	.1Ω	†11KΩ	Top Cap #100Ω
V 20	6W4GT	INF	INF	600KΩ	INF	†100Ω	INF	#.3Ω	#0Ω	
V 21	1B3GT	PINS 1 THRU 8 HAVE INF RESISTANCE								Top Cap #560Ω
V 22	5U4G	INF	8KΩ	INF	■27Ω	INF	■25Ω	INF	8KΩ	
V 23	20CP4	0Ω	■55KΩ	Pin 10 #100KΩ	Pin 11 250KΩ	Pin 12 .1Ω				

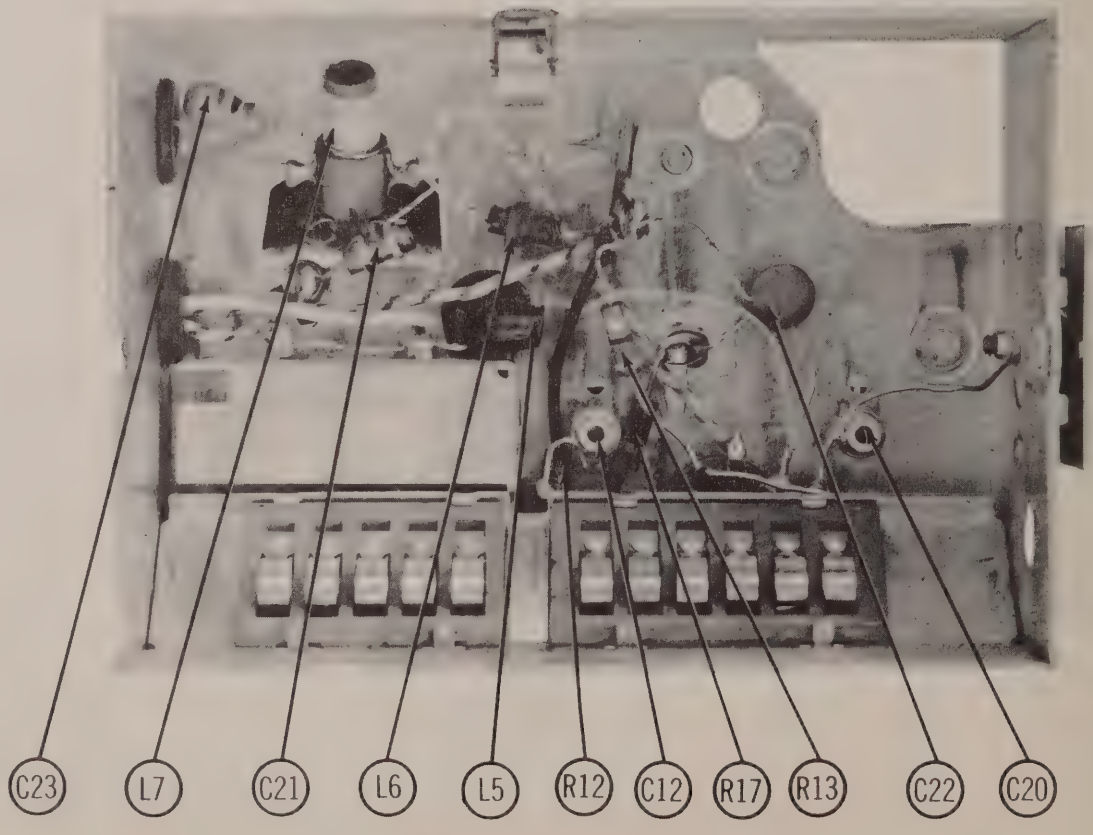
ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM PIN 2 OF V22
# MEASURED FROM PIN 3 OF V20
■ MEASURED FROM -100VDC LINE



ALTERNATE TUNER SCHEMATIC



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

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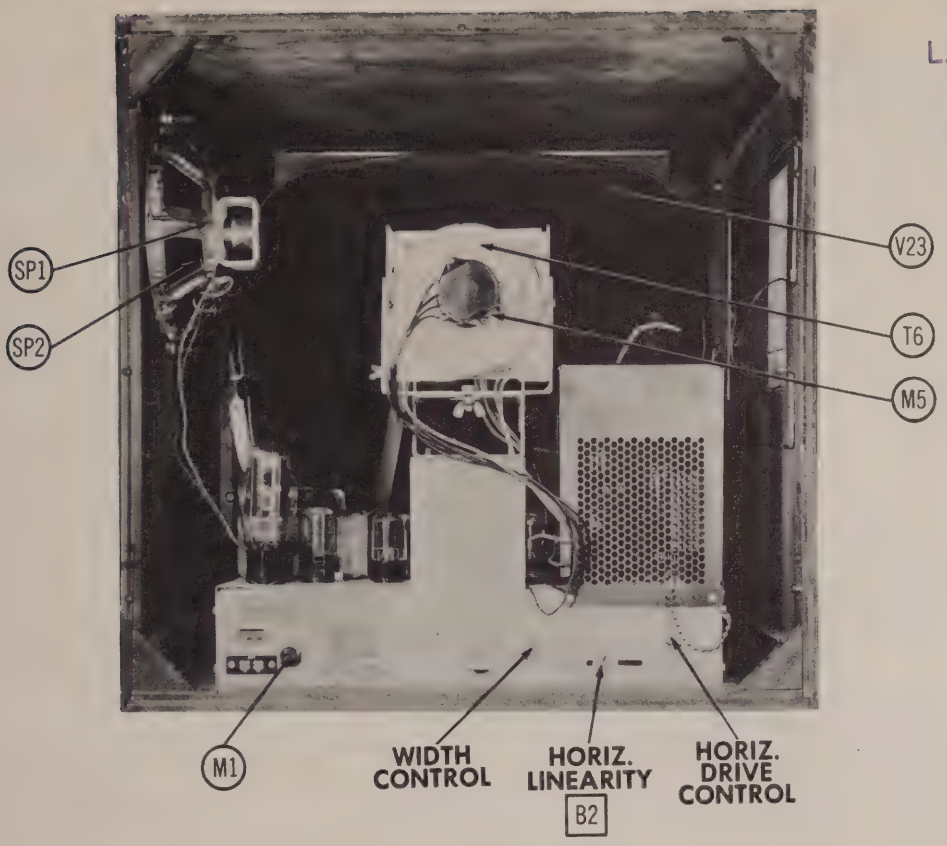


CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Adjust the horizontal hold slug until the picture synchronizes horizontally.

Decrease the contrast and increase the shading until the normally blanked edges of the raster are visible. If necessary adjust the centering until the right hand edge of the raster is visible. Adjust the horizontal phasing slug, (B1), until one quarter inch on 17 in. tubes, three-eighths in. on 19 in. tube, of raster is visible beyond the right edge fof the picture. If B1 requires considerable adjustment repeat the adjustment of the horizontal hold slug.

Turn the horizontal drive control clockwise until white vertical lines appear in the picture. If the white lines do not appear leave the control at maximum clockwise.

Adjust the width control until the picture is slightly wider than necessary to fill the mask horizontally.

Adjust the horizontal linearity slug, (B2), until the picture is symmetrical from left to right.

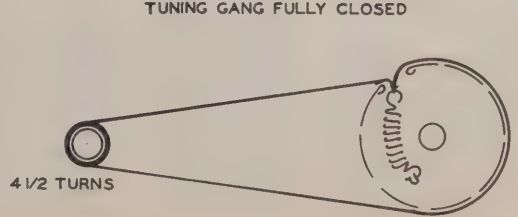
Since both width and horizontal linearity are effected by the drive it may be necessary to adjust them alternately for best results.

DISASSEMBLY INSTRUCTIONS

1. Remove 8 wood screws and antenna leads from rear cover. Remove cover.
2. Disconnect and remove speaker.
3. Remove 5 push-on type control knobs.
4. Remove 4 chassis bolts and remove chassis.

Note: For picture tube removal it is necessary to remove chassis as outlined above.

DRIVE CORD STRINGING



PARTS LIST AND DESCRIPTIONS

PROPERTY OF
L. F. BLANKENSHIP
3324 MEADE ST.
DENVER, COLORADO

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CAPEHART PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6AK5	6AK5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6AG5	6AG5	7BD	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Amp.	6AH6	6AH6	7BK	
V7	Sound IF Amp.	6AU6	6AU6	7BK	
V8	Ratio Det.	6AL5	6AL5	6BT	
V9	AF Amp.-AGC Clamper	6AV6	6AV6	7BT	
V10	Audio Output	6K6GT	6K6GT	7S	
V11	1st. Sync. Amp.	6CB6	6CB6	7CM	
V12	Sync. Sep.-AGC Det.-Noise Clipper	12AT7	12AT7	9A	
V13	AGC Amp.-2nd. Sync. Amp.	12AU7	12AU7	9A	
V14	Sync. Clipper Vert. Mult.	6SN7GT	6SN7GT	8BD	
V15	Vert. Mult.-Vert. Output.	6K6GT	6K6GT	7S	
V16	Horiz. Sync. Discr.	6AL5	6AL5	6BT	
V17	Horiz. AFC	6AU6	6AU6	7BK	
V18	Horiz. Osc. Horiz. Disch.	6SN7GT	6SN7GT	8BD	
V19	Horiz. Output	6BG6G	6BG6G	5BT	
V20	Damper	6W4GT	6W4GT	4CG	
V21	HV Rect.	1B3GT	1B3GT	3C	
V22	LV Rect.	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: CAPEHART PART No.	SYLVANIA PART No.	THOMAS PART No.	RTMA BASE TYPE	NOTES
V23	20CP4	20CP4	20CP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CAPEHART PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	475	750090B-12	AFH3-54		UP44150		TVL-4840	▲ Filter
B	35	475							■ Vert. Output Dec.
C	10	475							▲ Decoupling
C2A	40	475	750090B-14	AFH2-72		UPT44150		TVL-2830	■ Decoupling
B	45	475							▲ Filter
C3A	40	475	750090B-13	AFH3-142		UPT303			■ Decoupling
B	40	250		PRS150/50		BR5015A			■ Video Amp. Screen
C	50	150							▲ Bias Filter
D	80	50							Vert. Output Cathode
C4	20	450	653228A-2	PRS450/20		BR2045A		TVA-1709	Decoupling
C5	20	450	653228A-2	PRS450/20		BR2045A		TVA-1709	Audio Output Dec.
C6	20	150	653228A-1	PRS150/20		BR2015A		TVA-1402	Audio Output Cathode
C7	10	50	653228A-3	PRS50/10		BR105		TVA-1304	Bias Filter
C8	10	50	653228A-3	PRS50/10		BR105		TVA-1304	AGC Filter
C9	4	50	653228A-4	PRS150/4		BR550		TVA-1303	Stabilizing Cap.
C10	3-9		451245A-1		829-10				Variable Trimmer
C11	8.2		650330A-13				NP0K-8R2		Fixed Trimmer
C12	5-3		451216A-1		829-3				Variable Trimmer
C13	100		451065A-1	SI100	D6-101		GP1K-101	5GA-T1	RF Amp. Dec.
C14	120		451064A-1	SI120	D6-121		GP2K-121	5GA-T12	RF Amp. Dec.
C15	1000		451061A-1	SI1000	D6-102		GP2L-102	5HK-D1	RF Amp. Fil.
C16	100		451065A-1	SI100	D6-101		GP1K-101	5GA-T1	RF Coupling
C17	5-3		451216A-1		829-3				Variable Trimmer
C18	20		451062A-1	SI20NP0	TCZ-20		NP0K-200		Osc. Grid Cap.
C19	10		451063A-1	SI10N750	TCN-10		N750K-100	5TCU-Q1	Fixed Trimmer
C20	5-3		451216A-1		829-3				Variable Trimmer
C21	10		451063A-1	SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C22A	1000			BPD-2X-01	DD-2-102		812-001	5HK-2D1	Conv. Fil.
B	1000								RF Bypass
C23	120		451064A-1	SI120	D6-121		GP2K-121	5GA-T12	IF Coupling
C24	.047	600	2248-4730	P688-047	DF-503	PTE6S5		6TM-S47	RF Bypass
C25	1500		450469A-2	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	RF Bypass
C26	.1	300	2246-1040	P288-1	DF-104	PTE4P1		2TM-P1	AGC Filter
C27	1500		450469A-2	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	AGC Filter
C28	1.5		650030A-9	SIL5NP0	TCZ-1.5		NP0K-1R5		Sound Trap Coupling
C29	74						N080-338-740		Fixed Trimmer
C30	1500		450469A-2	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	1st Video IF Dec.
C31	1500		450469A-2	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	1st Video IF Fil.
C32	.1	200	2246-1040	P288-1	DF-104	PTE4P1		2TM-P1	AGC Filter
C33	1500		450469A-2	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	AGC Filter
C34	5			SI5NP0	TCZ-4.7		NP0K-050		Fixed Trimmer
C35	1500		450469A-2	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	2nd. Video IF Dec.
C36	1500		450469A-2	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	2nd. Video IF Fil.
C37	1500		450469A-2	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	3rd. Video IF Dec.
C38	1500		450469A-2	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	3rd. Video IF Cathode
C39	5		650030A-1	SI5NP0	TCZ-4.7		NP0K-050		Video Det. Filter
C40	1500		450469A-2	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	Bias Filter
C41	1500		450469A-2	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	Bias Filter
C42	.1	200	2246-1040	P288-1	DF-104	PTE4P1		2TM-P1	Video Coupling
C43	.1	600	2248-1040	P688-1	DF-104	PTE6P1		6TM-P1	Bias Filter
C44	3.3		650030A-9	SI3.3NP0	TCZ-3.3		NP0K-3R3		Sound IF Coupling
C45A	5000		† 452268A-1	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Sound IF Decoupling
B	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	Sound IF Cathode
C46	470	500	750272A-12	1468-0005	D6-471	5W5T1	GP1K-471	1FM-35	Diode Load Cap.
C47	.001	600	2248-1020	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	De-emphasis
C48	.01	600	2248-1030	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C49	.01	600	2248-1030	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C50	100	500	750272A-11	1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	AF Amp. Plate
C51	.01	600	2248-1030	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C52	470	500	750272A-12	1468-0005	D6-471	5W5T1	GP2K-471	1FM-35	Tone Comp.
C53	.0022	600	2248-2220	P688-0022	D6-222	PTE6D2	GP2-333-222	6TM-D22	Audio Output Plate
C54	.01	600	2248-1030	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	1st. Sync. Amp. Cathode
C55	220	500	750272A-33	1468-00025	D6-220	5W5T25	GP2K-221	1FM-325	Sync. Coupling
C56	.22	400	2247-2240	P488-22		PTE4S2		4TM-S22	Sync. Sep. Cathode ¶
C57	.047	600	2248-4730	P688-047	DF-503	PTE6S5		6TM-S47	Sync. Coupling

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CAPEHART PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C58	100	500	720272A-11	1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	Sync. Coupling
C59	.01	600	2248-1030	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Sync. Clipper Plate
C60	.01	600	2248-1030	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Vert. Sync. Coupling
C61A	.002			P688-002		PTE6D2	GP2-333-202		Vert. Integrator Net
B	.005		* 452265A-1	P688-005	* PC-100	PTE6D5	GP2-333-502	* 101C1	Vert. Integrat or Net
C	.005			P688-005		PTE6D5	GP2-333-502		Vert. Integrator Net
C62	.033	600	2248-3335	P688-033		PTE6S3		6TM-S3	Vert. Discharge
C63	.1	600	2248-1040	P688-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling
C64	.001	1000	2249-1020	P1088-001		PTE1ED1		MB-D1	Vert. Feedback
C65	.0047	600	2248-4725	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Voltage Divider
C66	.047	600	2248-4730	P688-047	DF-503	PTE6S5		6TM-S47	Fixed Trimmer
C67	470	500	750272A-12	1469-0005		5R5T5		MS-35	Voltage Divider
C68	100	500	750272A-11	1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	Horiz. Sync. Coupling
C69	.0047	600	2248-4725	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Fixed Trimmer
C70	.0047	600	2248-4725	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	AFC Filter
C71	.047	600	2248-4730	P688-047	DF-503	PTE6S5		6TM-S47	AFC Filter
C72	100	500	750272A-11	1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	AFC Filter
C73	.015	400	2247-1535	P488-015					Fixed Trimmer
C74	.001	600	2248-1020	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Osc. Grid Cap.
C75	.01	600	2248-1030	P688-01	D6-103	PTE6S1	GP2-338-103	6TM-S1	Horiz. Sweep Coupling
C76	.047	600	2248-4730	P688-047	DF-503	PTE6S5		6TM-S47	RF Bypass
C77	680	500	750272A-32	1479-0007		2R5T7		MS-37	Horiz. Discharge
C78	.0047	600	2248-4725	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Horiz. Sweep Coupling
C79	.047	600	2248-4730	P688-047	DF-503	PTE6S5		6TM-S47	Horiz. Output Screen
C80	.1	200	2246-1040	P288-1	DF-104	PTE4P1		2TM-P1	Horiz. Output Cathode
C81	30	6000	452310A-1						Fixed Trimmer
C82	.022	600	2248-2230	P688-022	DF-203	PTF6S2		6TM-D22	Damper Filter
C83	.022	600	2248-2230	P688-022	DF-203	PTE6S2		6TM-D22	Damper Filter
C84	.01	600	2248-1030	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Damper Filter
C85	.01	600	2248-1030	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	RF Bypass
C86	500	20000	650153B-2	HV20C	TV3-502				HV Filter
C87	.22	200	2246-2240	P488-22		GT2P25		2TM-P22	RF Bypass
C88	.1	200	2246-1040	P288-1	DF-104	PTE4P1		2TM-P1	Bias Filter
C89	1500		450469A-2	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	Line Filter
C90	1500		450469A-2	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	Line Filter

†Items C45A, C45B, R113A, R113B are combined in one unit.
* Items C61A, C61B, C61C, R114A, R114B, R114C are combined in one unit.
¶ Some models use .047MFD in this application (Part No. 2248-4730).

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CAPEHART PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg	½	450896B-1	Q13-137	AG-63-Z	B-70-S	Volume Control
B	Shaft			Not Req.	FS-3		Attach to R1A per instructions
C	Switch			76-1	SWB		Attach to R1A per instructions
R2A	250Ω	3	450966A-1		RTV-60	VK125	Width Control - Wire Wound
B	Shaft			Not Req.	Not Req.	Not Req.	Attach to R2A per instructions
R3A	1Meg	½	450894A-1	Q11-137	AM-61-S	AN-69	Horizontal Drive Control
B	Shaft			Not Req.	FKS-1/4	AK-1	Attach to R3A per instructions
R4A	5KΩ	½	450893A-1	Q11-114	AM-15-S	AN-10	Vertical Linearity Control
B	Shaft			Not Req.	FKS-1/4	AK-1	Attach to 4A per instructions
R5A	1.5Meg	½	450892A-1	Q11-138	AG-83-S		Vertical Hold Control
B	Shaft			Not Req.	FKS-1/4		Attach to R5A per instructions
R6A	500KΩ	½	450897A-1	Q11-133	AG-58-S	B-59	AGC Set Control
B	Shaft	½		Not Req.	FKS-1/4		Attach to R6A per instructions
R7A	450Ω		450891A-1		RTV-10	AN10	Focus Control
B	Shaft				Not Req.	AK-1	Attach to R7A per instructions
R8A	200KΩ	½	452226A-1		AG-52-S	B-46	Brightness Control
B	Shaft	½			FS-3		Attach to R8A per instructions
R9A	1.5KΩ	½	750266A-2		AG-11-S		Contrast Control
B	Shaft				KSS-3		Attach to R9A per instructions
R10A	2.5Meg	½	452733A-1	Q11-239	AG-84-S	B-83	Height Control
B	Shaft			Not Req.	FKS-1/4		Attach to R10A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CAPEHART PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 20% UNLESS OTHERWISE SPECIFIED
R11	100KΩ				Antenna Coil Shunt
R12	2200Ω		3229-222	BTS-2200	RF Amp. Decoupling
R13	4700Ω 10%		3229-472	BTS-4700	Osc. Plate
R14	10KΩ		3229-103	BTS-10K	Osc. Grid
R15	47KΩ		3229-473		RF Amp. Grid
R16	10KΩ		3229-103		RF Coil Shunt
R17	220KΩ		3229-224		Mixer Grid
R18	4700Ω		3229-472	BTS-4700	Mixer Grid
R19	10KΩ		3229-104		AGC Network
R20	100KΩ		3229-273		AGC Network
R21	24KΩ 5%		3228-243		AGC Network
R22	27KΩ 10%		3229-273		1st. Video IF Grid
R23	47Ω		3229-470		1st. Video IF Cathode
R24	8200Ω		3229-822		AGC Network
R25	100Ω		3229-392	BTS-100	1st. Video IF Decoupling
R26	3000Ω 10%		3229-392		1st. Video IF Coil Shunt - See Note 1
R27	470Ω 10%		3229-471	BTS-470	AGC Network
R28	68Ω		3229-680		2nd. Video IF Cathode
R29	100Ω 10%		3229-392	BTS-100	Decoupling
R30	100KΩ 10%		3229-103		2nd. Video IF Coil Shunt - See Note 2
R31	150Ω 10%		3229-151	BTS-150	3rd. Video IF Cathode
R32	3300Ω 10%		3229-332	BTS-3300	Video Detector Diode Load
R33	1800Ω 10%		3229-182	BTS-1800	Video Detector Diode Load
R34	1000Ω 10%	1	3229-102	BTA-1000	Peaking Coil Shunt
R35	39KΩ 10%		3229-393	BTS-39K	Video Amp. Screen
R36	120Ω		3229-121		Balancing
R37	68KΩ 10%		3229-683		De-emphasis
R38	12KΩ 10%		3229-121	BTS-12K	Ratio Detector Diode Load
R39	10Meg		3229-106	BTS-10Meg	AF Amp. Grid
R40	1KΩ		3229-105	BTS-1K	AF Amp. Cathode
R41	220KΩ		3229-224	BTS-220K	AF Amp. Plate
R42	470KΩ		3229-224	BTS-470K	Output Grid
R43	560Ω 10%	1	3232-561	BTA-560	Output Cathode
R44	1800Ω 10%	½	3232-182	BTS-1800	Output Decoupling
R45	2500Ω 10%	1	3232-222	BTA-700	Output Decoupling See Note 3
R46	82KΩ 10%	½	3229-823	BTS-82K	Bias Network
R47	2Meg 5%		3228-205	BTS-2Meg 5%	AGC Network
R48	1.5Meg		3229-155	BTS-1.5Meg	Feedback

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CAPEHART PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R49	470KΩ 10%	½	3229-244	BTS-470K	Picture Tube Cathode
R50	470KΩ 10%	½	3229-474	BTS-470K	Picture Tube Cathode
R51	27KΩ 10%	½	3229-273	BTS-27K	Voltage Divider
R52	5KΩ	7	650101A-8		Video Output Plate Load- Wire Wound
R53	5KΩ	7	650101A-8		Video Output Decoupling- Wire Wound
R54	100KΩ	1	3232-104	BTA-100K	1st Sync. Amp. Plate
R55	100KΩ	1	3232-104	BTA-100K	1st Sync. Amp. Plate
R56	10KΩ 10%	½	3229-273	BTS-10K	1st Sync. Amp. Grid
R57	100Ω 10%	½	3229-101	BTS-100	1st Sync. Amp. Cathode
R58	330KΩ 10%	½	3229-334	BTS-330K	Sync. Separator Cathode
R59	220KΩ	½	3229-224	BTS-220K	Sync. Separator Cathode
R60	330KΩ 10%	½	3229-334	BTS-330K	Noise Clipper Grid
R61	470KΩ	½	3232-224	BTS-470K	AGC Amp. Cathode See Note 4
R62	470KΩ	½	3232-224	BTS-470K	AGC Amp. Cathode See Note 7
R63	470KΩ	½		BTS-470K	AGC Amp. Cathode See Note 8
R64	470KΩ	½		BTS-470K	AGC Amp. Cathode See Note 8
R65	10KΩ 5%	½	3229-103	BTS-10K - 5%	Bias Network
R66	47KΩ	1	3232-473	BTA-47K	2nd Sync. Amp. Plate
R67	47KΩ	1	3232-473	BTA-47K	2nd Sync. Amp. Plate
R68	2.2Meg	½	3229-225	BTS-2.2Meg	2nd Sync. Amp. Grid
R69	47KΩ	½	3229-334	BTS-47K	AGC Det. Plate
R70	5.1KΩ 10%	½	3229-472	BTS-5.1K	Bias Network See note 5.
R71	3.9Meg 10%	½	3229-395	BTS-3.9Meg	Sync. Clipper Grid
R72	2200Ω 10%	½	3229-222	BTS-2200	Sync. Clipper Cathode
R73	10KΩ 10%	½	3229-273	BTS-10K	Sync. Clipper Plate
R74	1Meg	½	3229-105	BTS-1Meg	Horiz. Sync. Discriminator Load
R75	470KΩ	½	3229-224	BTS-470K	Horiz. Sync. Discriminator Load
R76	470KΩ	½	3229-224	BTS-470K	Horizontal Sync. Discriminator Load
R77	470KΩ	½	3229-224	BTS-470K	Horiz. Sync. Discriminator Filter
R78	10KΩ	½	3229-273	BTS-10K	Horiz. Sync. Discriminator Filter
R79	1KΩ	½	3229-105	BTS-1K	Horiz. AFC Grid
R80	470KΩ 10%	½	3229-474	BTS-470K	Horiz. Osc. Grid
R81	47KΩ	½	3229-473	BTS-47K	Horiz. Discharge Plate
R82	1.6KΩ	2	3229-182		Horiz. Osc. Decoupling - Wire wound
R83	22KΩ	1	3229-223	BTS-22K	Horiz. Ringing Coil Shunt
R84	2200Ω	½	3229-222	BTS-2200	Horiz. Osc. Plate
R85	2.2Meg 10%	½	3229-225	BTS-2.2Meg	Horiz. Discharge Grid
R86	47Ω	½	3229-470		Parasitic Suppressor
R87	1Meg 10%	½	3229-105	BTS-1Meg	Horiz. Output Grid
R88	22KΩ 10%	1	3232-273	BTA-22K	Horiz. Output Screen
R89	27KΩ 10%	1	3232-223	BTA-27K	Horiz. Output Screen
R90	100KΩ	½	3229-104	BTS-100K	Voltage Divider
R91	470KΩ	1	3232-474	BTA-470K	Voltage Divider
R92	47KΩ 10%	½	3229-473	BTS-47K	Vertical MV Feedback
R93	47KΩ 10%	½	3229-334	BTS-47K	Vertical MV Feedback
R94	6.8KΩ	2	3229-682	BTS-6.8K	Horizontal Peaking
R95	220Ω	4	650101A-20		Horizontal Output Cathode - Wire Wound
R96	1200Ω	1	3232-122	BTA-1200	Width Control Shunt
R97	2.2KΩ	1	3232-222	BTA-2.2K	Vert. Output Decoupling
R98	560Ω 10%	1	3232-561	BTA-560	Vert. Output Cath.
R99	56KΩ 5%	½	3229-563	BTS-56K 5%	Vertical Output Trans. Shunt See Note 6
100	3.9Meg 10%	½	3229-395	BTS-3.9Meg	Vertical Output Grid
R101	560KΩ 10%	½	3229-564	BTS-560K	Vert. MV Plate
R102	15KΩ 10%	½	3229-153	BTS-15K	Vertical Peaking
R103	470KΩ	½	3229-224	BTS-470K	Vertical MV Grid
R104	28KΩ	2	4509IA-1		Vertical MV Grid - Temperature Compensating
R105	2.7KΩ 5%	½	3229-272	BTS-2.7K	Vertical MV Cathode
R106A	60Ω	2	6502IIA-1		Voltage Divider - Wire Wound
B	680Ω	5			Focus Coil Shunt - Wire Wound
R107A	1600Ω	12	650466A-1		Filter Wire Wound See Note 7
B	3100Ω	5			Voltage Divider - Wire Wound
R108	4KΩ	5			Filter - Wire Wound See Note 8
R109	5KΩ	7			Voltage Divider - Wire Wound - See Note 8
R110	1260Ω	20			Bias Network - Wire Wound - See Note 9
R111	5KΩ	5			Bias Network - Wire Wound - See Note 8
R112	220Ω	½	3229-221	BTS-220	Voltage Divider
R113A	150Ω	½	† 452268A-1	BTS-150	Sound IF Cathode
B	220Ω	5		BTS-220	Sound IF Dec.
R114A	22KΩ	½	* 452265A-1	BTS-22K	Integrator Network
B	8200Ω	½		BTS-8200	Integrator Network
C	8200Ω	½		BTS-8200	Integrator Network

Note 1 Some Models use 2 resistors in parallel to obtain required resistance.
Note 2 Some Models use a 15KΩ Resistor in this application
Note 3 Some Models use a 2200Ω Resistor in this application
Note 4 Some Models use a 220KΩ Resistor in this application
Note 5 Some Models use a 4.7KΩ Resistor in this application
Note 6 Some Models use a 68KΩ Resistor in this application
Note 7 Some Models use 1140Ω and 8700Ω Resistor in this application
Note 8 Not used in all Models
Note 9 Some Models use a 1000Ω Resistor in this application
† Items R113A, R113B, C45A, C45B are combined in one unit
* Items R114A, R114B, R114C, C61A, C61B, C61C are combined in one unit

SPEAKER

ITEM No.	RATINGS: FIELD RES.	RATINGS: V. C. IMP.	REPLACEMENT DATA: CAPEHART PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	P. M.	3.3Ω	750151A-1	ST-115 Mod. P8-V	8A21	
	CONE DIA.	V. C. DIA.				
SP2	8 in.	9/16 in.				

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: CAPEHART PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC	760VCT @ 2.3A	5VAC @ 3A	6.3VAC @ 9.5A	750144B-3	P-8159	P-3059	TP-3
T2	6.3VAC @ 1.2A	6.3VAC @ 1.2A			650243A-1			

CAPEHART CHASSIS
CT-27, CT-38, CT-45 (Ch. Series CX-33DX)

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING		REPLACEMENT DATA				NOTES
	DC RESISTANCE		CAPEHART PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.					
T3	560Ω Tapped @100Ω	0Ω	750163C-1	A-8131	HV0-8		Horiz. Output Trans.
T4	400Ω	.4Ω	650238A-1	A-8140	A-3080 ①		Vert. Output Trans.
T5A	44Ω		750192C-2				Horiz. Deflection Coils
B	4Ω						Vert. Deflection Coils
T6	440Ω		750149B-1	FC-11 ②	MF-2 ②		Focus Coil

① Drill New Mounting Holes
② Fabricate New Mounting Bracket

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CAPEHART PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T7	7KΩ	3.3Ω	440Ω	.5Ω	650216A-1	A-8114 ③	A-3020	R0-201	③ Drill one new mounting hole

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	CAPEHART PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.250ADC	63Ω	1.6HY	650215A-1	C-2326 ①	C-2991 ①	TR-3300 ①	① Drill new mounting holes.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	CAPEHART PART No.	MERIT PART No.	IRC PART No.	
L2	Ant. Coil	0Ω		451294A-1			Channel 2
L3	Fil. Choke	0Ω		451029A-1			
L4	RF, Mixer Grid & Osc. Coils	0Ω		451046A-1			Channel 2
L5	Fil. Choke	0Ω		451030A-1			
L6	RF Choke	0Ω		451214A-1			
L7	1st Video IF	.2Ω		451209A-1			
L8	RF Choke	5.6Ω		470338A-1		CL-1	6.8Microhenries
L9	Sound Trap	.2Ω		650275A-1			Includes Trap
L10	2nd Video IF	.3Ω	.3Ω	750261A-2			
L11	Fil. Choke	0Ω		452667A-1			
L12	3rd Video IF	.3Ω	.3Ω	650218A-1			
L13	4th Video IF	.3Ω	.3Ω	650218A-1			
L14	Peaking Coil	10.5Ω		650220A-1			500 Microhenries
L15	Peaking Coil	5.7Ω		650219A-1			180Microhenries Wound on 39KΩ resistor
L16	Peaking Coil	3.6Ω		650219A-3			98Microhenries Wound on 15KΩ resistor
L17	Peaking Coil	3.6Ω		650219A-3			98Microhenries, Wound on 15KΩ resistor
L18	Peaking Coil	7Ω		650220A-3			250Microhenries
L19	Sound IF	2Ω	2Ω	450518A-2			
L20	Ratio Det. Trans.	4.3Ω	.2Ω	650235A-1			Tap @ 1.2Ω
L21	Horiz. Osc.	72Ω	38Ω	650230A-1			Tap@ 36Ω, Tertiary Winding 10Ω
L22	Horiz. Ringing Coil	21Ω		650221A-1			11 Microhenries
L23	Horiz. Lin.	30Ω		450938A-1			

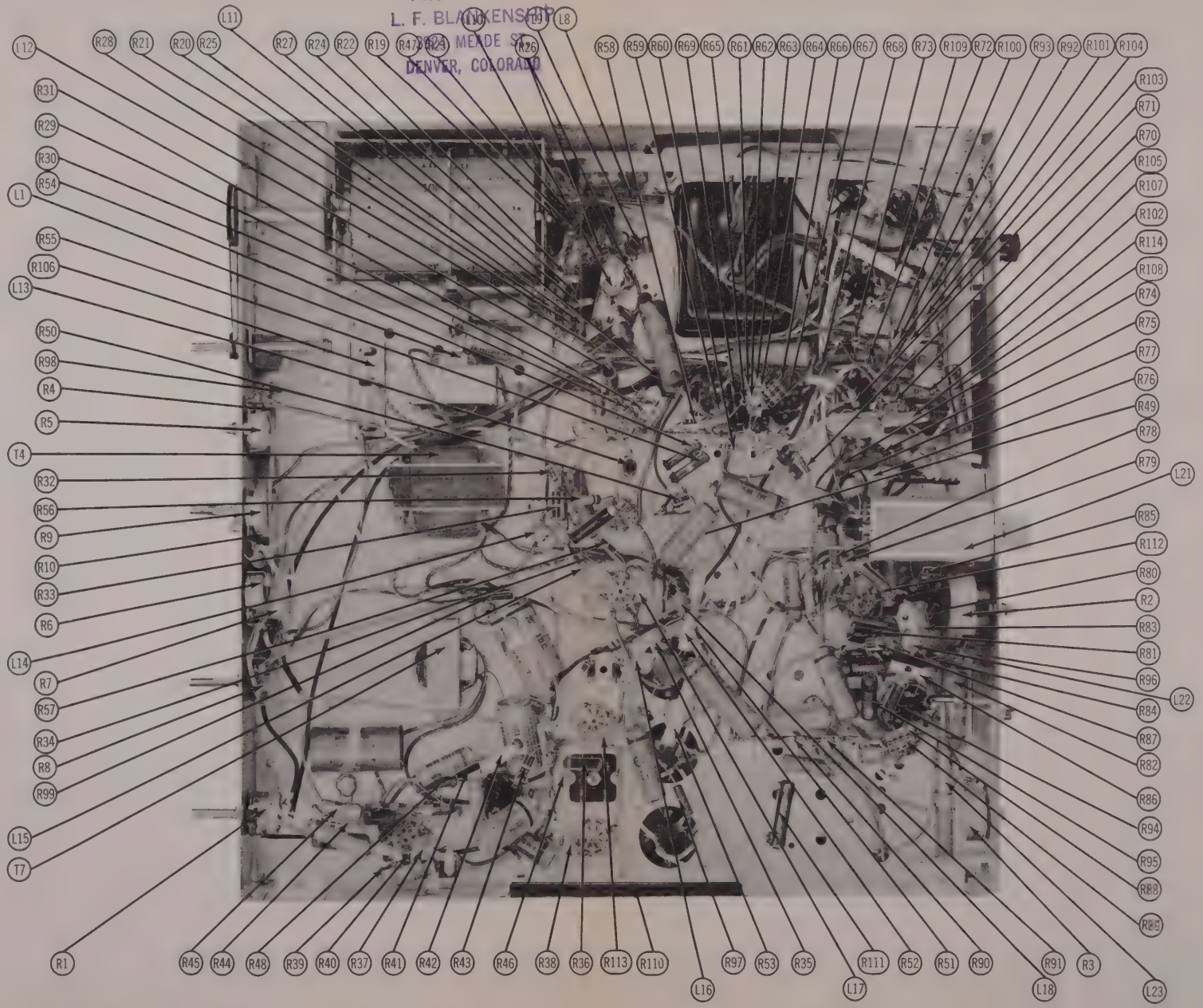
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			CAPEHART PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG	5A	450317A-3	452083A-1	312005	342001	
M2	3AG Pigtail	1/4A	450183A-1		318.250		

MISCELLANEOUS

ITEM No.	PART NAME	CAPEHART PART No.	NOTES
M3	RF Tuner	850196A-G1	Complete
M4	Crystal		(1N34)
M5A	Ion Trap	650161A-4	Double
B	Ion Trap	650276A1	Single
C	Ion Trap	650276A-4	Single
	Ant. Coil	451294A-1	Channel #2
	Ant Coil	451295A-1	Channel #3
	Ant. Coil	451296A-1	Channel #4
	Ant. Coil	451297A-1	Channel #5
	Ant. Coil	451398A-1	Channel #6
	Ant. Coil	451039A-1	Channel #7
	Ant. Coil	451040A-1	Channel #8
	Ant. Coil	451041A-1	Channel #9
	Ant. Coil	451042A-1	Channel #10
	Ant. Coil	451043A-1	Channel #11
	Ant. Coil	451044A-1	Channel #12
	Ant. Coil	451045A-1	Channel #13
	RF Mixer & Osc.	451046A-1	Channel #2
	RF Mixer & Osc.	451047A-1	Channel #3
	RF Mixer & Osc.	451048A-1	Channel #4
	RF Mixer & Osc.	451049A-1	Channel #5
	RF Mixer & Osc.	451050A-1	Channel #6
	RF Mixer & Osc.	451051A-1	Channel #7
	RF Mixer & Osc.	451052A-1	Channel #8
	RF Mixer & Osc.	451053A-1	Channel #9
	RF Mixer & Osc.	451054A-1	Channel #10
	RF Mixer & Osc.	451055A-1	Channel #11
	RF Mixer & Osc.	451056A-1	Channel #12
	RF Mixer & Osc.	451057A-1	Channel #13

PROPERTY OF
L. F. BLACKENSHIP
2824 MEADE ST.
DENVER, COLORADO



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

EMERSON
MODEL 691B (Ch. 120145-B)

EMERSON
MODEL 691B (Ch. 120145-B)

TRADE NAME	Emerson Model 691B (Ch. 120145-B)
MANUFACTURER	Emerson Radio & Phono. Corp., 111 Eighth Ave., New York, N. Y.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 12BE6 Converter, 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier.
POWER SUPPLY	110-120 Volts AC/DC
RATING	.26 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC
SHORT WAVE	6-18MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set pointer to the last reference dot at the left hand end of dial backplate. Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to Pin 7, (Grid) of 12BE6, (V1). Low side to B- .	455KC (400~Mod.)	BC (CW)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	400Ω carbon resistor	High side thru 400Ω to external antenna terminal. Low side to B-.	18.2MC	SW	"	"	A5	Adjust for maximum output.
3.		Loop	1620KC	BC	"	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	1420KC	"	Tune for max. output.	"	A7	"
5.		"	600KC	"	Set pointer to second dot from left end of dial back-plate.	"	A8	Rock tuning gang while adjusting for maximum output.
6.		Loop	17.2MC	SW	Tune for max. output.	"	A9	Rock tuning gang while adjusting for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	Converter	800525	12BE6	7CH	
V2	IF Amp.	800524	12BA6	7BK	
V3	Det.-AVC-AF Amp.	800523	12AT6	7BT	
V4	Audio Output	800032	50C5	7CV	
V5	Rectifier	800526	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: EMERSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150	925206	PRS150/50-		BRD5515A		TVA-2453	Filter (Red)
B	50	150		50					Filter (Green)
C2	.002	600	912723	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Ant. Isolation
C3	5200	500	915031						Fixed Trimmer
C4	100		928010	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	Osc. Grid Cap.
C5	.05	400	921554	P488-05	DF-503	PTE4S5		4TM-S5	Decoupling
C6	.05	400	921554	P488-05	DF-503	PTE4S5		4TM-S5	AVC Filter
C7A	220		♦ 923023	SI220	D6-221	5W5T25	GP2K-221	♦ 34C3	Diode RF Filter
B	.002			P688-002	D6-202	PTE6D2	GP2-333-202		Audio Coupling
C	220			SI220	D6-221	5W5T25	GP2K-221		AF Amp. Plate
D	.005			P688-005	D6-502	PTE6D5	GP2-333-502		Audio Coupling
C8	.02	400	921524	P488-02	DF-203	PTE4S2		4TM-S2	Audio Output Plate
C9	.01	400	921514	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Rectifier Plate
C10	.05	400	921554	P488-05	DF-503	PTE4S5		4TM-S5	Fil. Bypass
C11	.1	600	923515	P688-1	DF-104	PTE6P1		6TM-P1	Line Isolation

♦ Items C7A, C7B, C7C, C7D are combined in one unit

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	390145	Q11-133	AG-58-S	SB-212-S	Volume Control
B	Shaft		Not req.	Not req.	KSS-3	Not req.	Attach to R1A per instructions
C	Switch		Not req.	76-1	SWB	Not req.	Attach to R1A per instructions

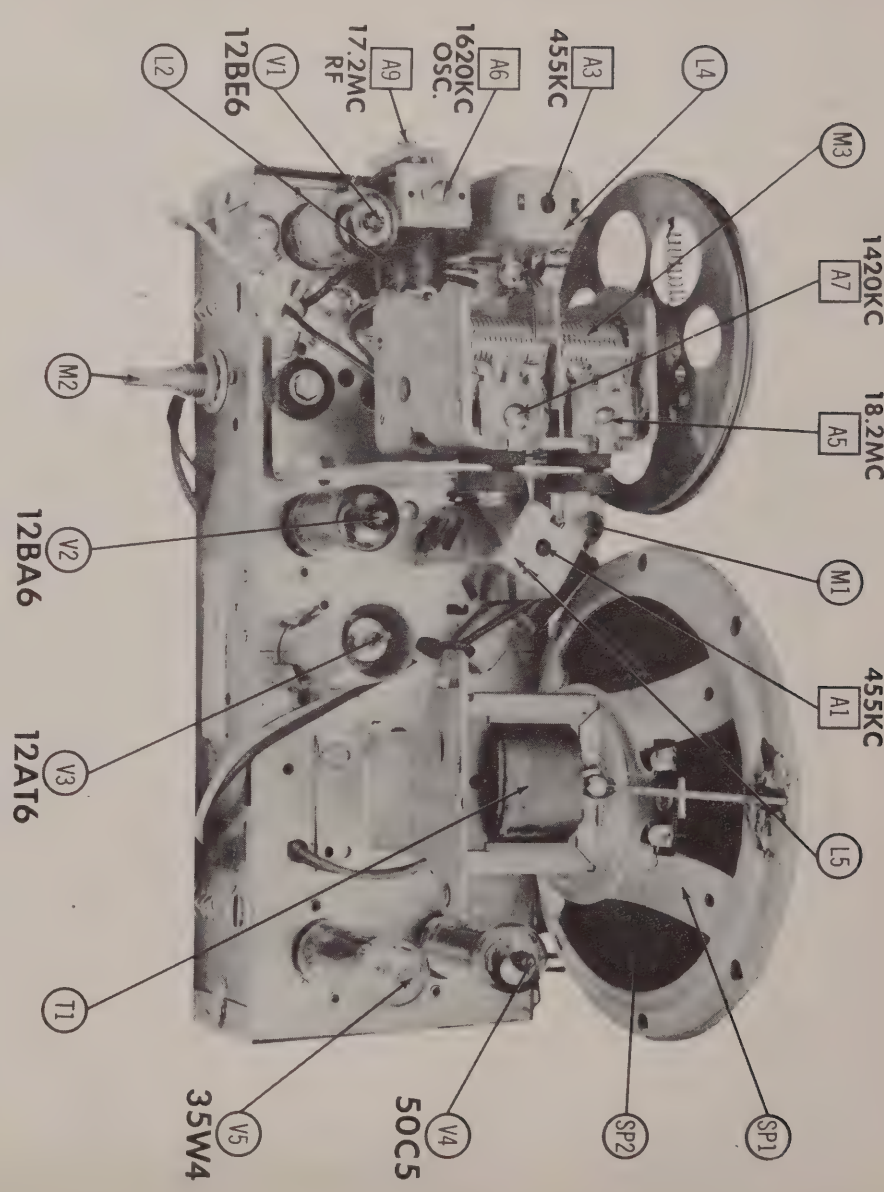
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	IDENTIFICATION CODES
R2	120Ω	½	340272		Parasitic Suppressor
R3	22KΩ	½	350812	BTS-22K	Osc. Grid
R4	120Ω	½	340272	BTS-120	IF Amp. Cathode
R5	3.3Meg	½	351332	BTS-3.3Meg	AVC Network
R6	10Meg	½	351452	BTS-10Meg	AF Amp. Grid
R7	470KΩ	½	351132	BTS-470K	AF Amp. Plate
R8	470KΩ	½	351132	BTS-470K	Output Grid
R9	150Ω	½	340292	BTS-150	Output Cathode
R10	1500Ω	1	380532	BW-1-1500	Filter
R11	18Ω	½	340072		Rectifier Ballast
R12	220KΩ	½	340052	BTS-220K	Isolation

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: EMERSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1	1.9KΩ	3.2Ω	165Ω	.6Ω	734067	A-3876	A-2928	RO-2	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	EMERSON PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	3.2Ω	180045 180080 ①	ST-105 Mod. P5-X	5A07	① Alternate Speaker
	CONE DIA.	V. C. DIA.				
SP2	4 7/8"	9/16"				

COILS (RF-IF)

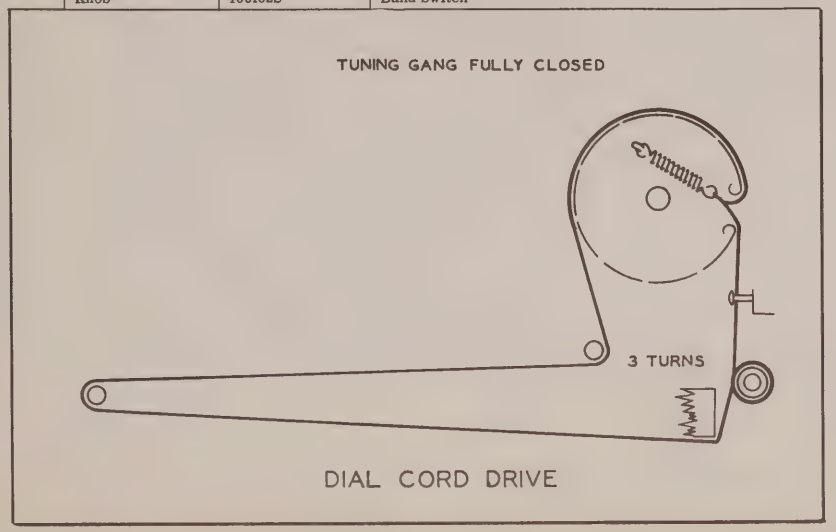
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	EMERSON PART No.	MERIT PART No.	
L1	BC Loop	3.2Ω		700058		
L2	SW Ant. Coil	.3Ω	.1Ω	710030		Includes Two 1.6 - 18MMF Trimmers
L3A	Osc. Coil	8.5Ω	.1Ω	716065		Broadcast
B	Osc. Coil	.2Ω	.2Ω			Short Wave
L4	Input IF	20Ω	20Ω	720525	BC-352	
L5	Output IF	21Ω	21Ω	720055	BC-353	

DIAL LIGHTS

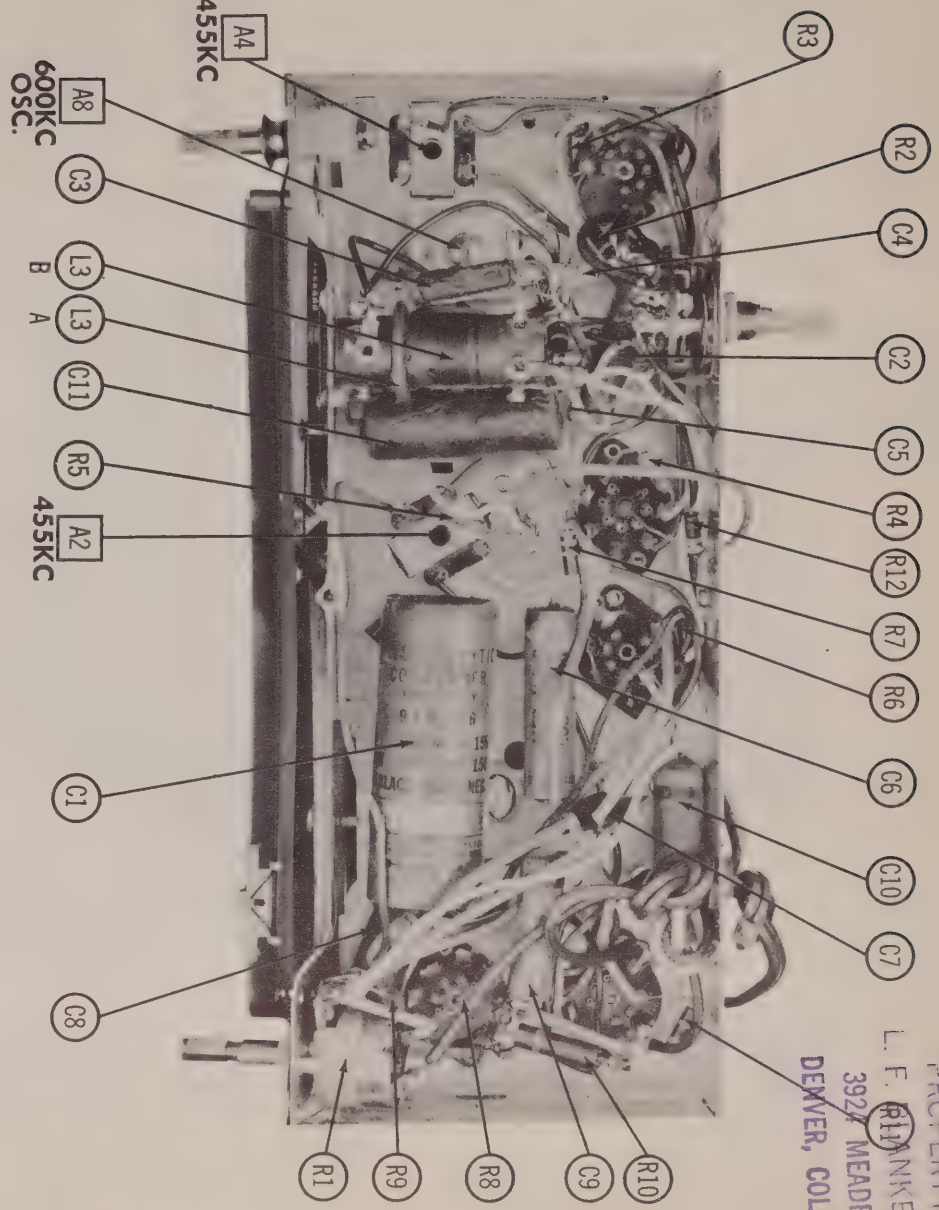
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					EMERSON PART No.		
M1	Bayonet	6-8	.150	Brown	807000		Type No. #47

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M2	Switch	510082	Band Change
M3	2gang Var. Cap.	900083	(26-468MMF, 24-454MMF)
A8	Trimmer	900210	Osc. Padder (300-600MMF)
	Cabinet	140426	Bakelite - Walnut
	Cabinet	140427	Urea - Ivory
	Dial Plate	411164	
	Dial Pointer	525022-2	
	Knob	460162	
	Knob	460162S	Band Switch



CHASSIS—BOTTOM VIEW



EMERSON MODEL 691B
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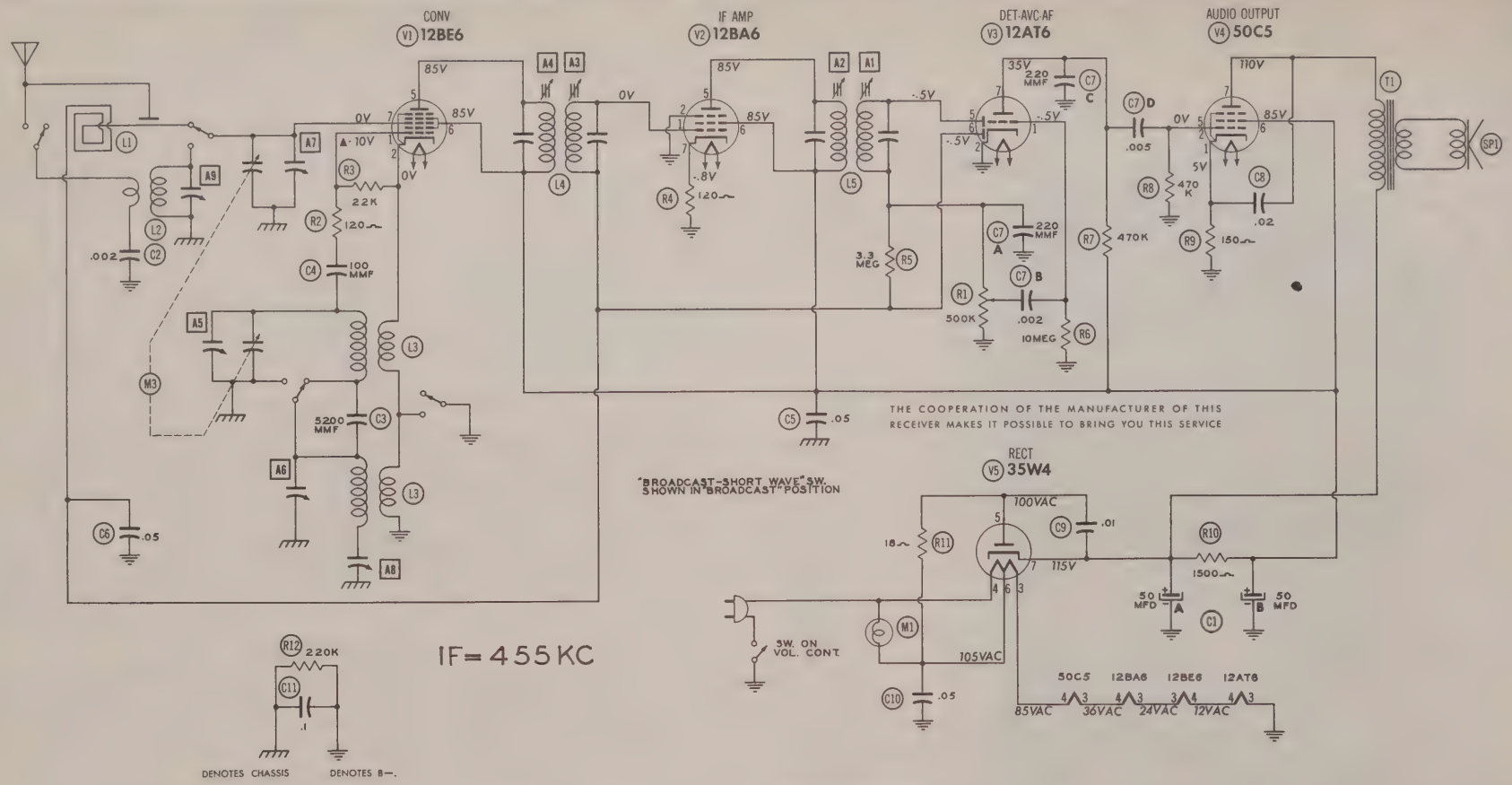
L. F. BLANKENSHIP
3927 MEADE ST.
DENVER, COLORADO

EMERSON MODEL 691B



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	1.2Ω	24Ω	12Ω	†1.5KΩ	†1.5KΩ	3.8Meg
V 2	12BA6	3.8Meg	0Ω	24Ω	36Ω	†1.5KΩ	†1.5KΩ	120Ω
V 3	12AT6	10Meg	0Ω	0Ω	12Ω	500KΩ	500KΩ	†470KΩ
V 4	50C5	150Ω	470KΩ	36Ω	86Ω	470KΩ	†1.5KΩ	†165Ω
V 5	35W4	Inf.	Inf.	86Ω	121Ω	128Ω	110Ω	60KΩ

ALL MEASUREMENTS TAKEN IN BC POSITION
† MEASURED FROM PIN 7 OF V5
▲ TAKEN WITH VACUUM TUBE VOLTMETER

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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EMERSON
MODEL 703B (Ch. 120097-B)

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TRADE NAME	Emerson Model 703B (Ch. 120097-B)
MANUFACTURER	Emerson Radio and Phonograph Corp., 111 Eighth Ave., New York 11, N.Y.
TYPE SET	AC Operated Radio-Phono Combination Superheterodyne Receiver with Loop Antenna
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC — RATING .24 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To position pointer, turn tuning gang fully closed and set pointer to reference mark at low frequency end of dial backplate. Use isolation transformer, if available, If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to rear stator of tuning gang. Low side to B-.	455KC (400~ mod)	Tuning gang fully open.	Across voice coil.	A1, A2 A3, A4	To set pointer, turn tuning capacitor fully closed and set pointer parallel with base of dial.
2.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for max. output.
3.		Loop	1400KC	Tune for max. output.	"	A6	Adjust for maximum output.

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT 819063 SEE V-M MODEL 950 PHOTOFACT SET #107-FOLDER 13 OR RECORD CHANGER MANUAL CM-3.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		EMERSON PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det. -AVC-AF Amp.	12AT6	12AT6	7BT	
V4	Audio Output	50B5	50B5	7BZ	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	EMERSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	50	150	925163	PRS150/50-50		BRD5515A		TVA-2453	Filter (Red)
B	50	150							Filter (Green)
C2	2.2				TCZ-2.2		NP0K-2R2		RF Coupling *
C3	.1	200	923315	P288-1	DF-104	PTE4P1		2TM-P1	AVC Filter
C4A	220		470310	SI220	D6-221		GP2K-221	34C3	Diode RF Filter
B	2000			SI2000	D6-202		GP2-333-202		Audio Coupling
C	220			SI220	D6-221		GP2K-221		AF Amp. Plate
D	5000			BPD-005	DD-502		811-005		Audio Coupling
C5	.01	400	923514	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Output Plate
C6	.05	400	923554	P488-05	DF-104	PTE4S5		4TM-S5	Tone Comp.
C7	.05	400	923554	P488-05	DF-104	PTE4S5		4TM-S5	Rectifier Plate
C8	.05	400	923554	P488-05		PTE4S5		4TM-S5	Phono Isolation
C9	.05	400	923554	P488-05		PTE4S5		4TM-S5	Line Isolation

* Not used in all models.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESIST-ANCE	WATTS	EMERSON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	Switch		510069-1				Radio and Phono Sw. -Panel
B	500KΩ	½	Not Req.				Volume Control and Sw. -Rear

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	EMERSON PART No.	IRC PART No.	
R2	22KΩ	½			Mixer Grid
R3	120Ω	½	340272	BTS-120	IF Amp. Cathode
R4	3.3Meg	½	351332	BTS-3.3Meg	AVC Network
R5	10Meg	½	351452	BTS-10Meg	AF Amp. Grid
R6	470KΩ	½	351132	BTS-470K	AF Amp. Plate
R7	470KΩ	½	351132	BTS-470K	Audio Output Grid
R8	150Ω	½	340292	BTS-150	Audio Output Cathode
R9	1000Ω	1	370492	BTA-1000	Filter
R10	39Ω	1	370152		Rectifier Ballast

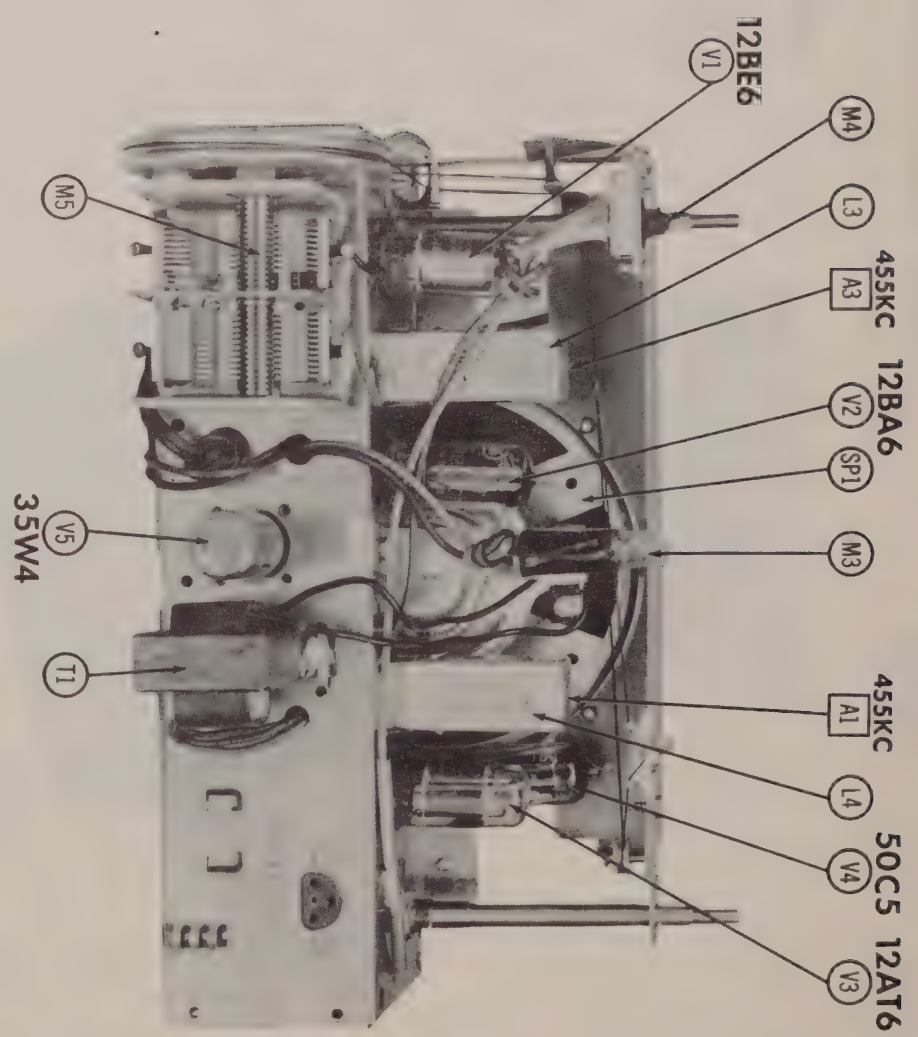
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		EMERSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	3KΩ	3.3Ω	230Ω Tapped @ 5.4 Ω	.6Ω	734055	A-3330 ①	A-3025 ①	R0-3 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	EMERSON PART No.	VIKING PART No.	QUAM PART No.	
SP1A	P.M.	3.3Ω	180052	5J4		
	CONE DIA.	V. C. DIA.				
SP1B	4½ in.	9/16 in.				

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA EMERSON PART No.	REPLACEMENT DATA MERIT PART No.	NOTES
L1	Loop Ant.	3Ω		700064		
L2	Osc. Coil	.6Ω	6Ω	716061		
L3	Input IF	21Ω	21Ω	720055		
L4	Output IF	21Ω	21Ω	720055		

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA EMERSON PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	SHURE PART No. CARTRIDGE	SHURE PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	REMARKS
M1	960143	GC-AG-J	G-AG	WC36B	A56U	43	0-2 or S-2	

ASTATIC, SHURE, AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

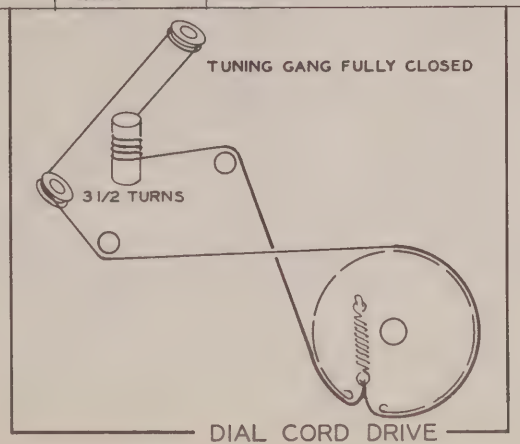
ITEM No.	REPLACEMENT DATA EMERSON PART No.	WALCO PART No.	JENSEN PART No.	REMARKS
M2		W-3AGA or W-3AGS	A-832 or A-742	

DIAL LIGHTS

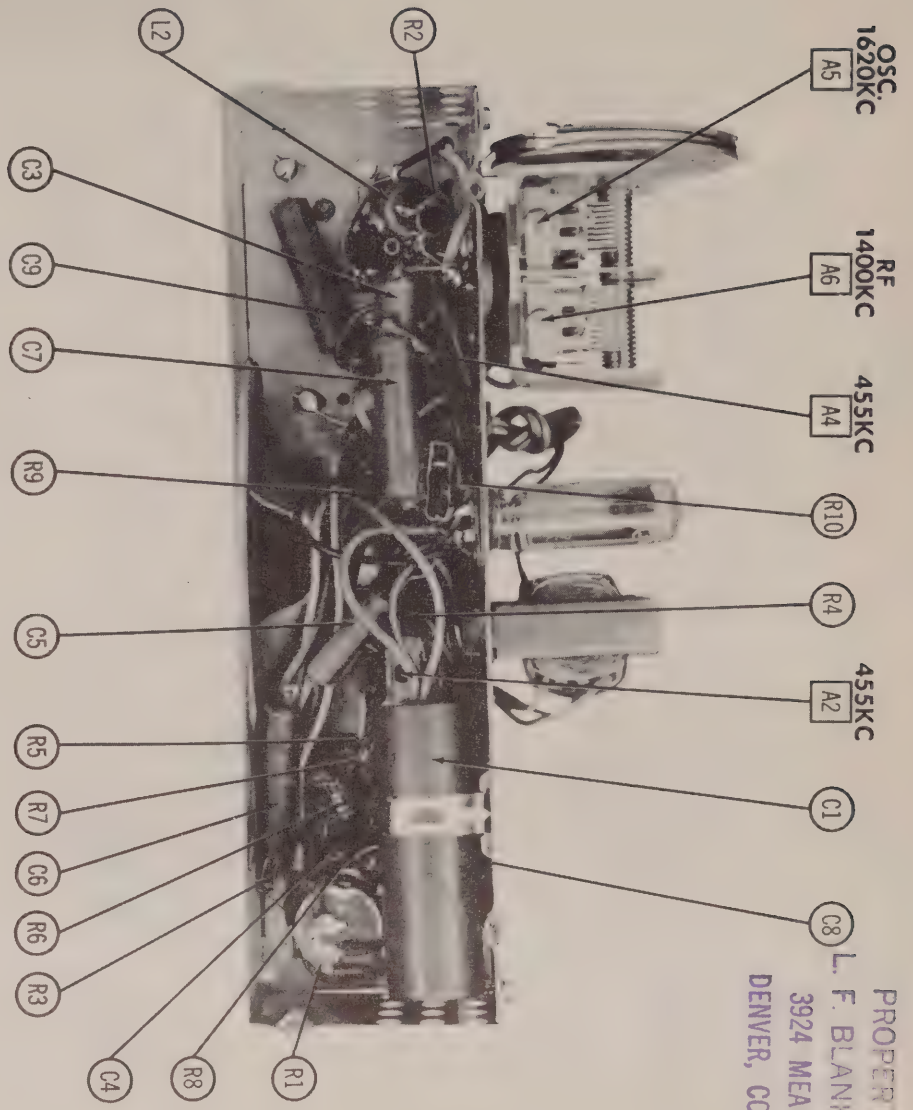
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA EMERSON PART No.		NOTES
M3	Bayonet	6-8	.15	Brown	807000		Type # 47

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M4	Switch	510068	Tone
M5	2 Gang Var. Cap.	900066	(21-407MMF, 31-187MMF)
	Cabinet	140438	
	Dial Glass	520156	
	Knob Assembly	450099S	
	Knob	450064	Control
	Knob	450063	Radio-Phono



CHASSIS—BOTTOM VIEW



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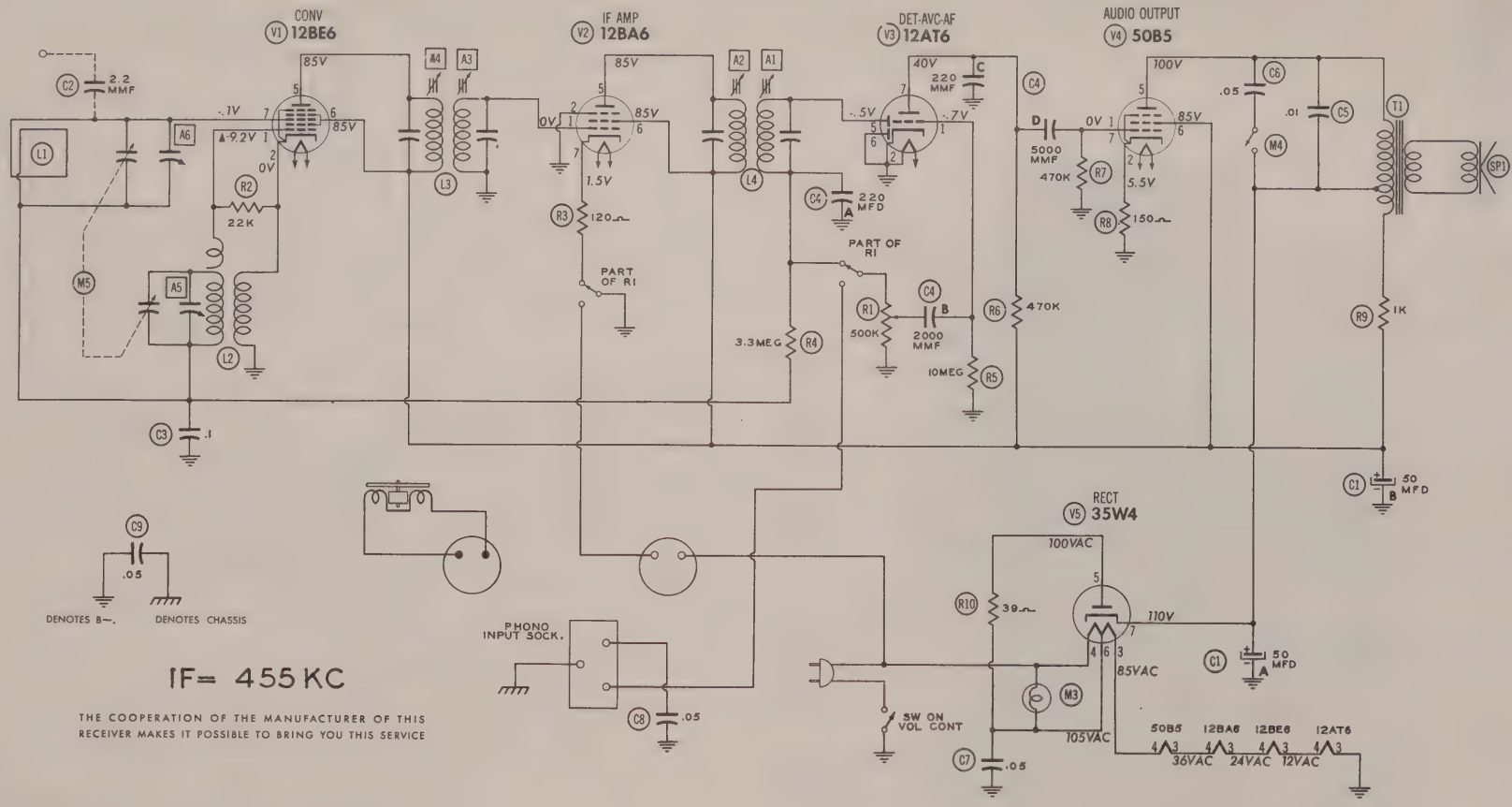

IF= 455 KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.6Ω	12Ω	24Ω	†1KΩ	†1KΩ	3.8Meg
V 2	12BA6	21Ω	0Ω	24Ω	36Ω	†1KΩ	†1KΩ	120Ω
V 3	12AT6	10KΩ	0Ω	0Ω	12Ω	500KΩ	0Ω	†470KΩ
V 4	50B5	470KΩ	150Ω	36Ω	86Ω	†230Ω	†1KΩ	470KΩ
V 5	35W4	†5.4Ω	3.8Meg	86Ω	121Ω	142Ω	103Ω	30KΩ

ALL MEASUREMENTS TAKEN IN RADIO POSITION
† MEASURED FROM PIN 7 OF V5
♦ TAKEN WITH VACUUM TUBE VOLTMETER
TONE SWITCH IN OPEN POSITION

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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160-4

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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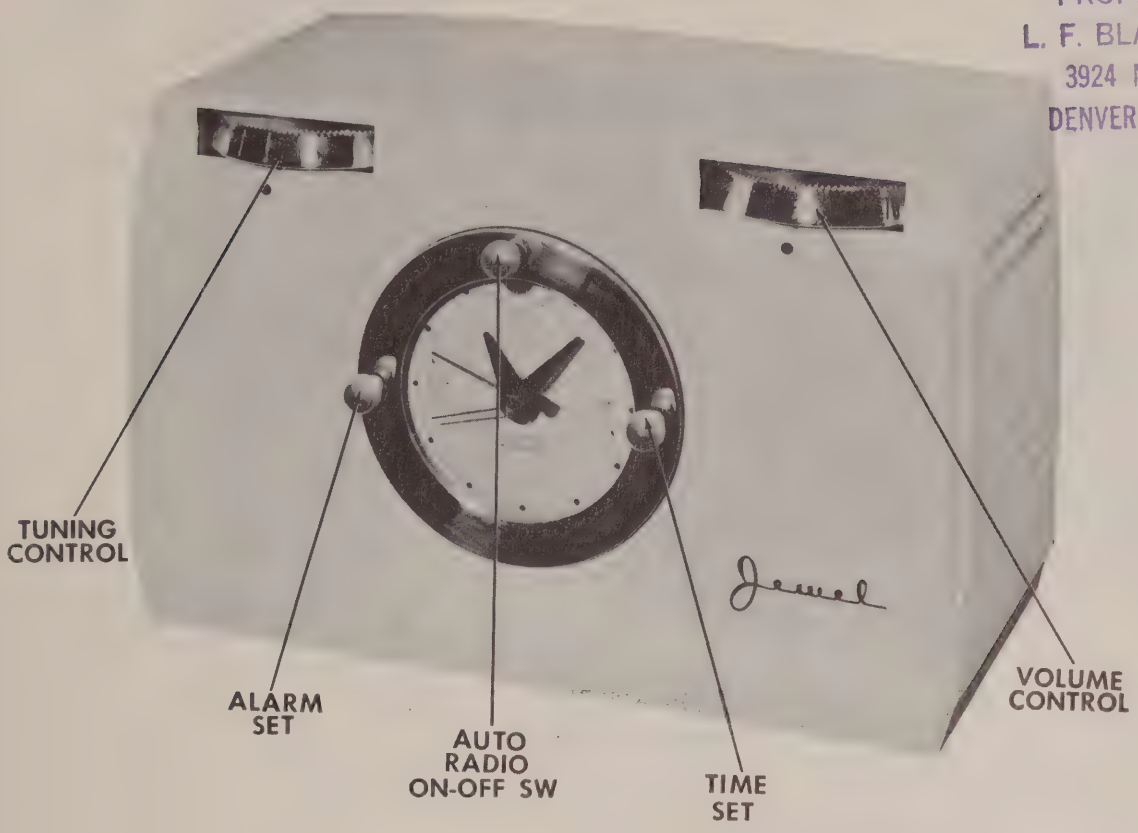
DENVER, COLORADO



JEWEL
MODEL 5040

TRADE NAME	Jewel Model 5040
MANUFACTURER	Jewel Radio Co., 10-40 45th Ave., Long Island City (1), N. Y.
TYPE SET	AC Operated Superheterodyne Receiver with Electric Clock.
TUBES (FOUR)	Types 12SA7 Converter, 12SQ7 Det.-AVC-AF Amp., 50L6GT Audio Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATINGS	.270 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and chassis.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator on bottom section of tuning gang. Low side to chassis.	455KC (400~Mod.)	Tuning gang fully open.	Across voice coil	A1, A2	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	200MMF	High side to ant. terminal on ant. coil, (remove hank). Low side to chassis.	1650KC	"	"	A3	Adjust for maximum output.
3.	"	"	1400KC	Tune for max. output.	"	A4	"

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		JEWEL PART No.	STANDARD REPLACEMENT		
V1A	Converter	12SA7	12SA7	8R	
B	Converter	12BE6	12BE6	7CH	
V2A	Det.-AVC-AF Amp.	12SQ7	12SQ7	8Q	
B	Det.-AVC-AF Amp.	12AT6	12AT6	7BT	
V3A	Audio Output	50L6GT	50L6GT	7AC	
B	Audio Output	50C5	50C5	7CV	
V4A	Rectifier	35Z5GT	35Z5GT	6AD	
B	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	JEWEL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	50	150		PRS150/50-30		EDL5315		TVA-2450	Filter (Red)
B	30	150							Filter (Blue)
C2	.002	400		P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Ant. Isolation
C3	100			SI100	D6-101	5W5T1	GP1K-101	5GA-T1	Osc. Grid Cap.
C4	.05	200		P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C5	100			SI100	D6-101	5W5T1	GP1K-101	5GA-T1	Diode RF Filter
C6	.002	400		P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Audio Coupling
C7	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C8	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Output Plate
C9	.05	400		P488-05		PTE4S5		4TM-S5	Line Filter

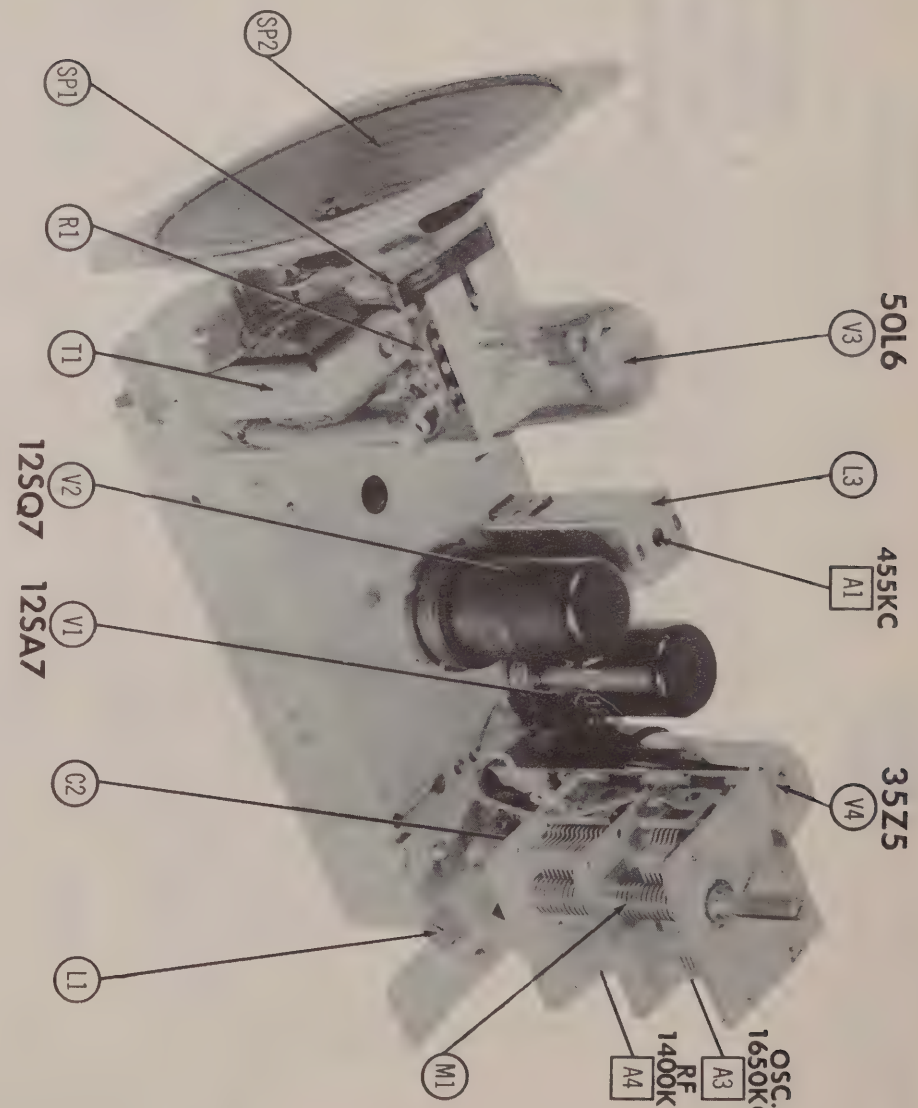
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	JEWEL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	2Meg	½	50-34	Q13-139	AG-66-Z	AN-76	Volume Control
B	Shaft		Not req.	Not req.	KSS-3	AK-4	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	JEWEL PART No.	IRC PART No.	
R2	22KΩ	½		BTS-22K	Oscillator Grid
R3	4.7Meg	½		BTS-4.7Meg	AVC Network
R4	10Meg	½		BTS-10Meg	AF Amplifier Grid
R5	470KΩ	½		BTS-470K	AF Amplifier Plate
R6	470KΩ	½		BTS-470K	Output Grid
R7	150Ω	½		BTS-150	Output Cathode
R8	1500Ω	1		BTA-1500	Filter
R9	22Ω	1			Series Filament
R10	22Ω	½			Rectifier Ballast

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		JEWEL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2.2KΩ	3.0Ω	140Ω	.4Ω		A-3332①	A-3025 ①		① Bend Mounting Tabs down, File out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	JEWEL PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	3.0Ω		ST-113 ② Mod. P4-X	4A1 ③	② Fabricate New Mounting Bracket ③ Use Universal Mounting Bracket
	CONE DIA.	V. C. DIA.				
SP2	4"	9/16"				

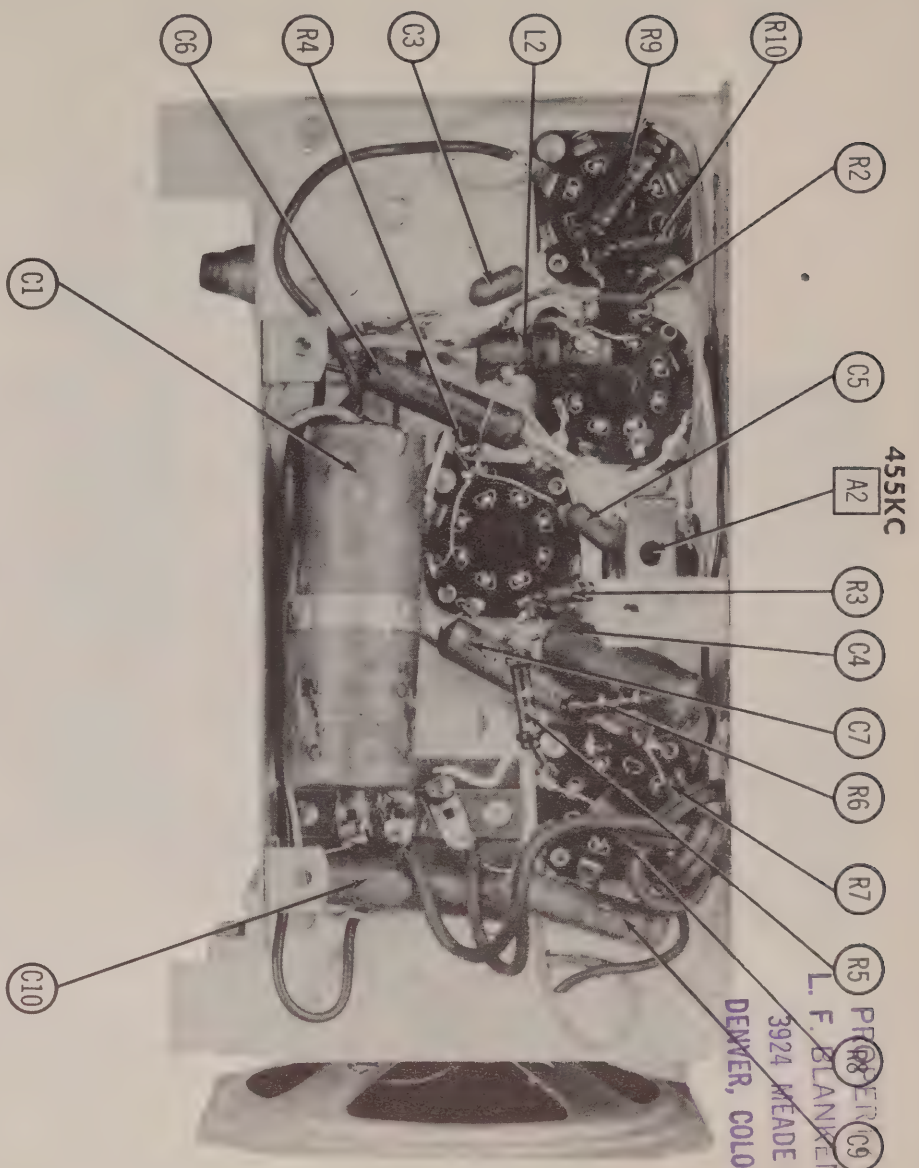
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	JEWEL PART No.	MERIT PART No.	
L1	Ant. Coil	65Ω	2.6Ω			
L2	Osc. Coil	6.4Ω				Tap at 5.8Ω
L3	IF Trans.	18Ω	20Ω			

MISCELLANEOUS

ITEM No.	PART NAME	JEWEL PART No.	NOTES
M1	2 gang Var. Cap.		(28-460MMF, 15-157MMF)

CHASSIS—BOTTOM VIEW



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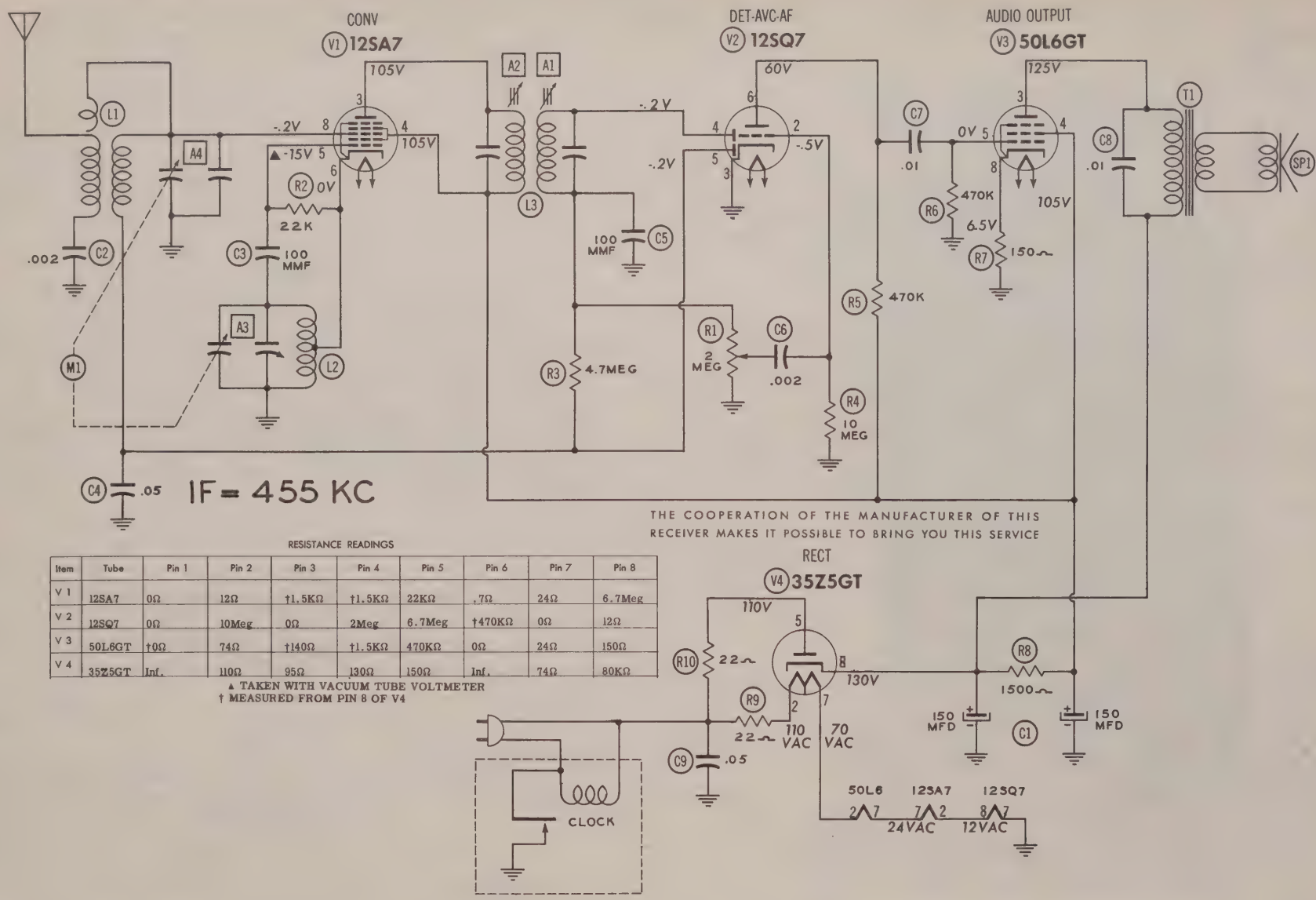
JEWEL MODEL 5040



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	0Ω	12Ω	†1.5KΩ	†1.5KΩ	22KΩ	.7Ω	24Ω	6.7Meg
V 2	12SQ7	0Ω	10Meg	0Ω	2Meg	6.7Meg	†470KΩ	0Ω	12Ω
V 3	50L6GT	†0Ω	74Ω	†140Ω	†1.5KΩ	470KΩ	0Ω	24Ω	150Ω
V 4	35Z5GT	Inf.	110Ω	95Ω	130Ω	150Ω	Inf.	74Ω	80KΩ

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 8 OF V4

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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KNIGHT
MODEL 96-279

KNIGHT
MODEL 96-279

TRADE NAME	Knight, Model 96-279	
SUPPLIER	Allied Radio Corp., 833 W. Jackson Blvd., Chicago 7, Ill.	
TYPE SET	AC Operated Audio Amp., with 3 speed Record Player	
TUBES (THREE)	Types 12SQ7 AF Amp., 50L6GT Audio Output, 35Z5GT Rectifier	
POWER SUPPLY	110-120 Volts AC	RATING .21 Amp. @ 117 Volts AC

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: KNIGHT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	AF Amplifier	12SQ7	12SQ7	8Q	
V2	Audio Output	50L6GT	50L6GT	7AC	
V3	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: KNIGHT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150	EC-14	PRS150/40-30-20		EDL44215		TVA-3448	Filter
B	40	150							Filter
C	20	150							Output Cathode
C2	.05	400	PC-5	P488-05	DF-503	PTE4S5		4TM-S5	Phono Isolation
C3	.01	600	PC-7	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C4	500	500	MC-5	1468-0005	D6-501		GP2K-501	1FM-35	AF Amp. Plate
C5	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C6	.01	400	PC-7	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Output Plate
C7	.05	400	PC-5	P488-05	DF-503	PTE4S5		4TM-S5	Line Isolation

† Some Models use 01MFD in this application (Part No. PC-7)

CONTROLS

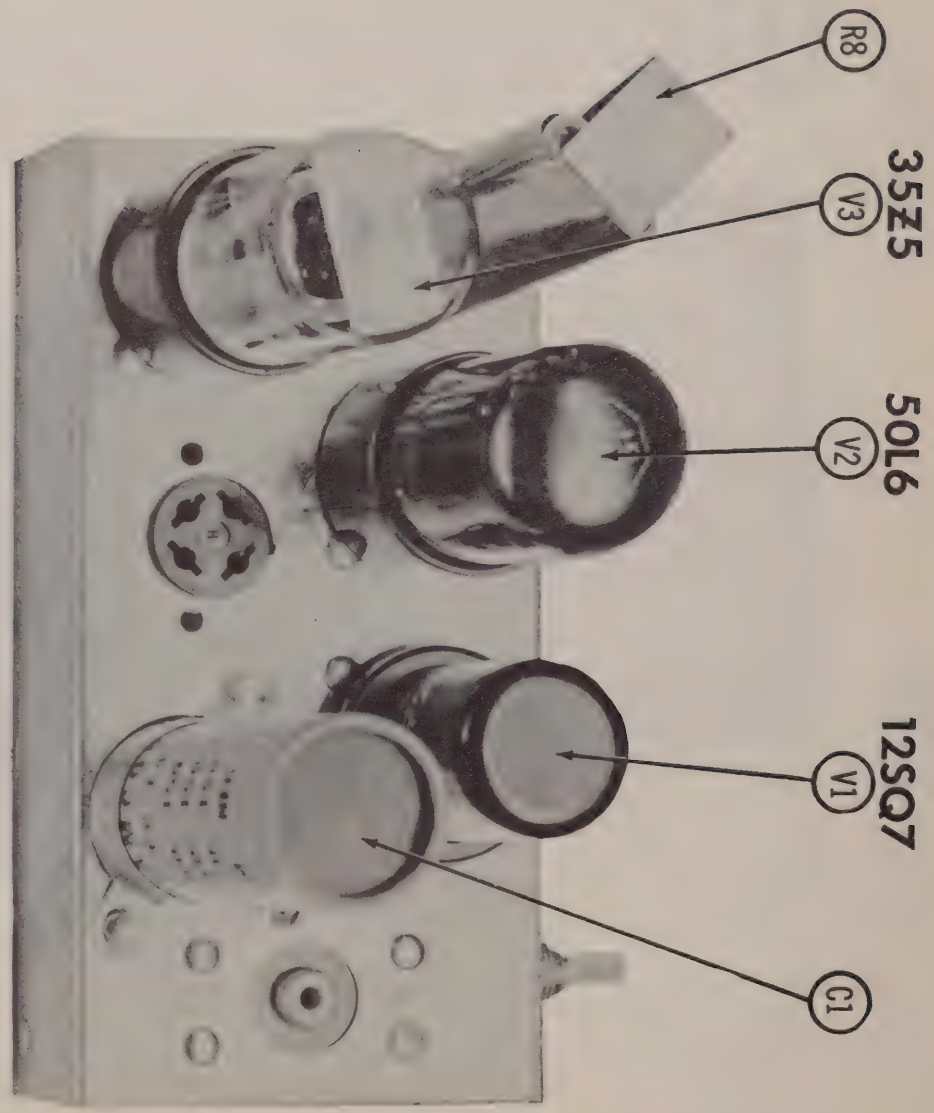
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: KNIGHT PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg	½	VC-9	Q13-137	AG-63-Z	BSK-70-S	Volume Control
B	Shaft		Not req.	Not req.	KSS-3	Not req.	Attach to R1A per instructions
C	Switch		Not req.	76-1	SWB	Not req.	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: KNIGHT PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 20% UNLESS OTHERWISE NOTED
R2	100KΩ	½		BTS-100K	Series Phono - See Note 1
R3	220KΩ	½	IR-20	BTS-220K	Phono Shunt
R4	2.2Meg	½		BTS-2.2Meg	AF Amp. Grid - See Note 2
R5	470KΩ	½	IR-11	BTS-470K	AF Amp. Plate - See Note 2
R6	470KΩ	½	IR-11	BTS-470K	Audio Output Grid
R7	150Ω	½	IR-14	BTS-150	Audio Output Plate
R8	130Ω	3	WR-2		Filament Dropping - Wire Wound
R9	33Ω	½	IR-17		Rectifier Ballast
R10	33Ω	½	IR-17		Surge Limiter
R11	10KΩ	½	IR-37	BTS-10K	Filter

Note 1. Some Models use a 470KΩ Resistor in this application
Note 2. Some Models use a 1Meg Resistor in this application

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		KNIGHT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2.3KΩ	3.0Ω	195Ω	.5Ω	Part of SPK-14X	A-3332①	A-3025①		① Bend Mounting Tabs Down, File out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	KNIGHT PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	3.0Ω	SPK-14X	ST-113 Mod. P4-X	4A07	
	CONE DIA.	V. C. DIA.				
SP1B	4"	9/16"				

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	KNIGHT PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	PU-11	LT-4-AG	D-AG	W66B	A66U	73	0-2 or S-2	
	*	510-LT-4 AG	*	92U	*	2400		* Complete arm assembly.

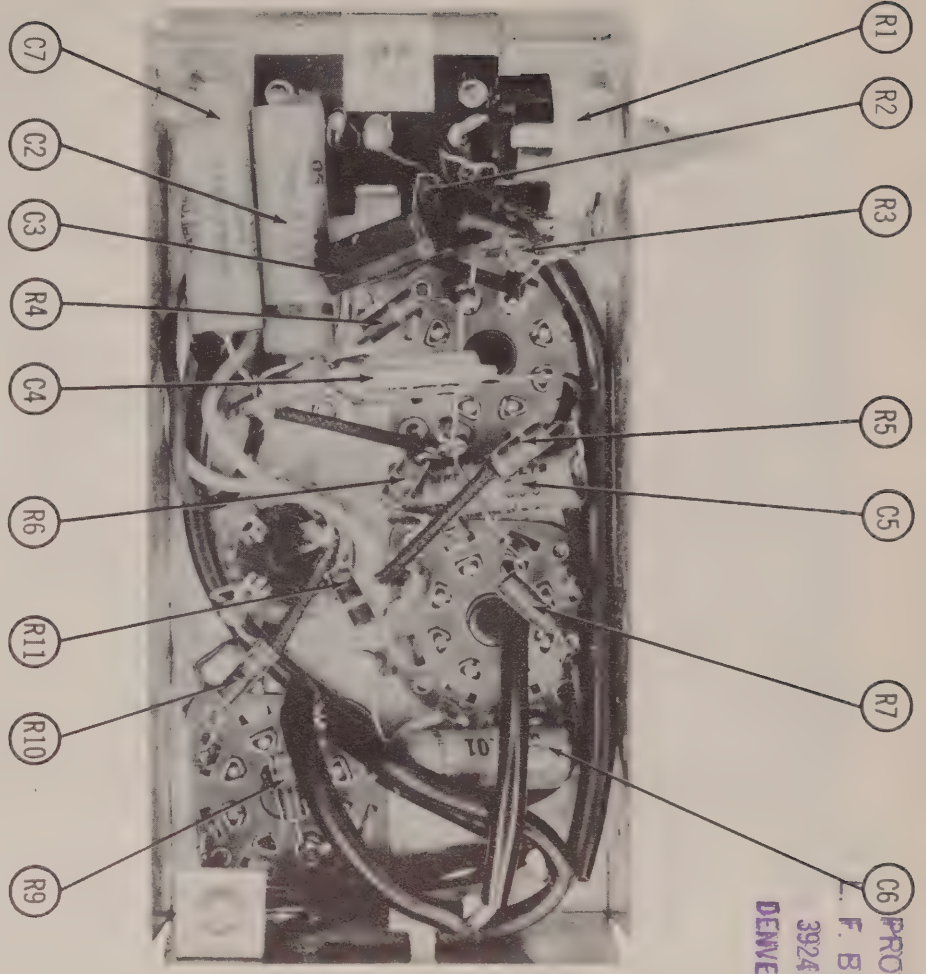
ASTATIC, SHURE, AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED: FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	KNIGHT PART No.	WALCO PART No.	JENSEN PART No.	
M2		W-6AGA	A-832	

CHASSIS—BOTTOM VIEW



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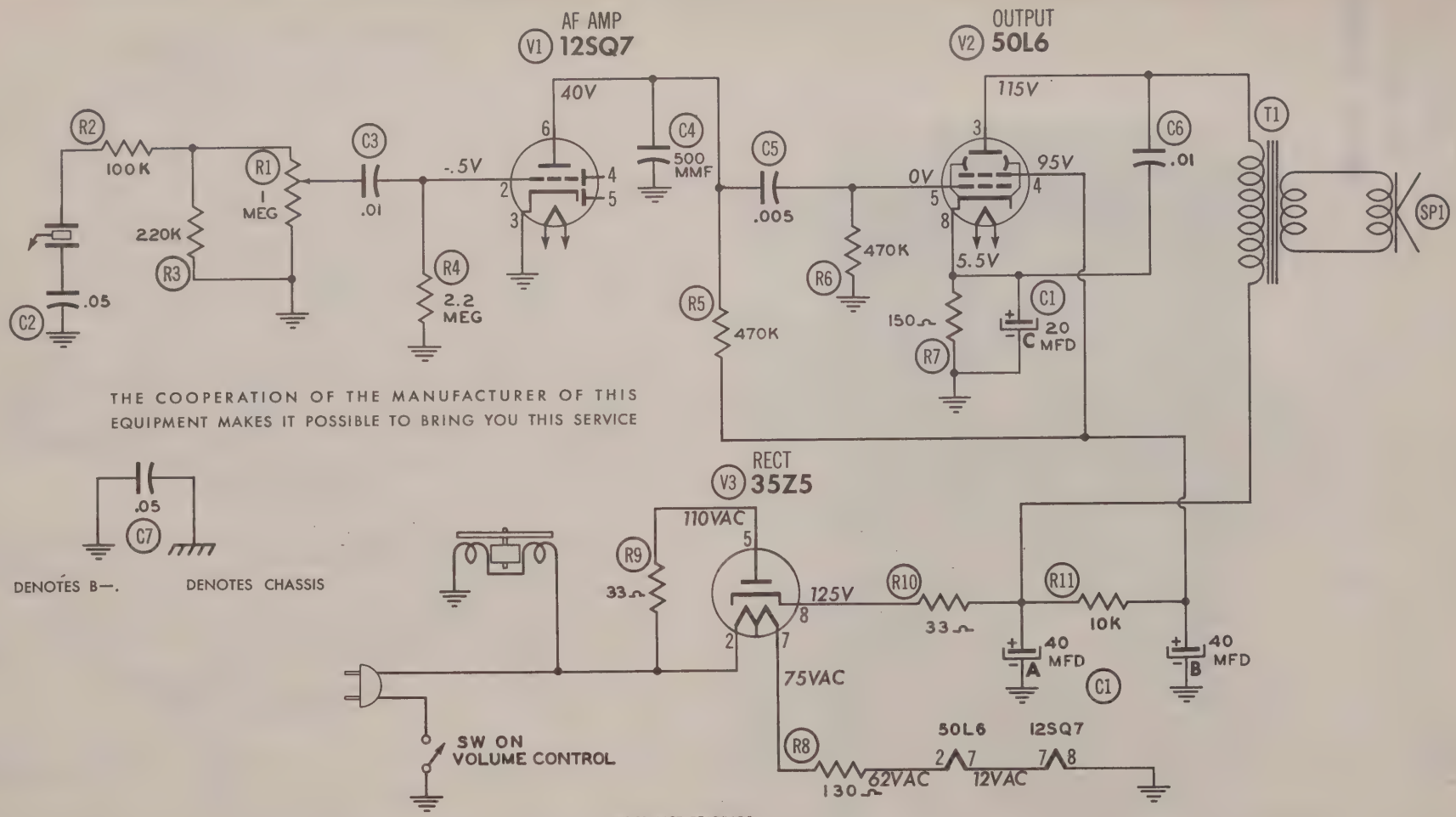
KNIGHT MODEL 96-279

KNIGHT MODEL 96-279



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SQ7GT	0Ω	2.2Meg	0Ω	Inf.	Inf.	†480KΩ	12Ω	0Ω
V 2	50L6GT	Inf	62Ω	†228Ω	†10KΩ	470KΩ	0Ω	12Ω	150Ω
V 3	35Z5GT	Inf	227Ω	210Ω	Inf	243Ω	Inf	192Ω	80KΩ

† MEASURED FROM PIN 8 OF V3

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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160-6

1 - DC Voltage measurements are at 20,000 ohms per volt, AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum; proper output load connected.

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PACKARD
MODEL 416387

TRADE NAME	Packard Model 416387
MANUFACTURER	Packard Motor Car Co., Detroi (32), Michigan
TYPE SET	Battery Operated Automobile Superheterodyne Receiver
TUBES (EIGHT)	Types 6SK7 RF Amp., 6SA7 Conv., 6SK7 IF Amp., 6SQ7 Det.-AF Amp., 6SQ7 Phase Inv.-AVC (2) 6V6GT Audio Output, OZ4 Rectifier.
POWER SUPPLY	6 Volt Storage Battery — RATING 7.5 Amp. @ 6.3 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

ALIGNMENT INSTRUCTIONS

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to Pin 8, (Grid) of 6SA7 (V2). Low side to chassis.	260KC (400∿ Mod.)	High Freq. Stop	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	68MMF	High side to ant. receptacle. Low side to chassis.	1615KC	High Freq. Stop. Check core setting of L5. Slotted end of core should be 1 25/32" from mounting end of coil form	"	A5, A6, A7	Adjust for maximum output.
3.	"	"	1000KC	Tune for max. output.	"	A8, A9	Adjust for maximum output.
4.	"	"	1615KC	High Freq. Stop.	"	A6, A7	Adjust for maximum output.
5.	"	"	1000KC	Tune for max. output.	"	Pointer adjust screw	Adjust so that pointer reads 1000KC on dial.

After set is installed, fully extend antenna and tune in a station between 600KC and 1000KC. Retouch A7 for maximum volume.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PACKARD PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	5229	6SK7	8N	
V2	Converter	5222	6SA7	8R	
V3	IF Amplifier	5229	6SK7	8N	
V4	Det.-AF Amp.	5231	6SQ7	8Q	
V5	Phase Inv.-AVC	5231	6SQ7	8Q	
V6	Audio Output	5241	6V6GT	7AC	
V7	Audio Output	5241	6V6GT	7AC	
V8	Rectifier	5003	0Z4	4R	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PACKARD PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	400	7260065	PRS450/20-20		UP15D45C			■ Filter
B	20	400		PRS25/20					▲ Filter
C	20	25							Audio Output Cathode
C2	.05	200	E503	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C3	33	500	G330	SI33	D6-330		GP1K-330	5GA-Q33	RF Coupling
C4	39	500	G390	1469-00004		5R5Q4		MS-44	Fixed Trimmer
C5	180		7257424				N150-333-181		Fixed Trimmer
C6	.05	500	E503	P488-05	DF-503	PTE4S5		4TM-S5	Screen Bypass
C7	15	500	G150	SI15	D6-150		GP1K-150	5GA-Q15	IF Coupling
C8	.002	600	E202	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Tone Comp.
C9	.002	600	E202	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Audio Coupling
C10	.001	600	E102	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	AF Amp. Plate Bypass
C11	.1	200	E104	P288-1	DF-104	PTE4P1		2TM-P1	Tone Comp.
C12	.001	600	E102	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	AF Amp. Cathode *
C13	.01	600	E103	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C14	.005	600	E502	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Phase Inv. Cathode
C15	.02	400	E203	P488-02	DF-203	PTE4S2		4TM-S2	Audio Coupling
C16	.008	800	H802			PTE16D8		MB-D8	Audio Output Plate
C17	.006	1600	H602	P1688-006		PTE16D6		MB-D6	Buffer Cap.

* Not Used In All Models

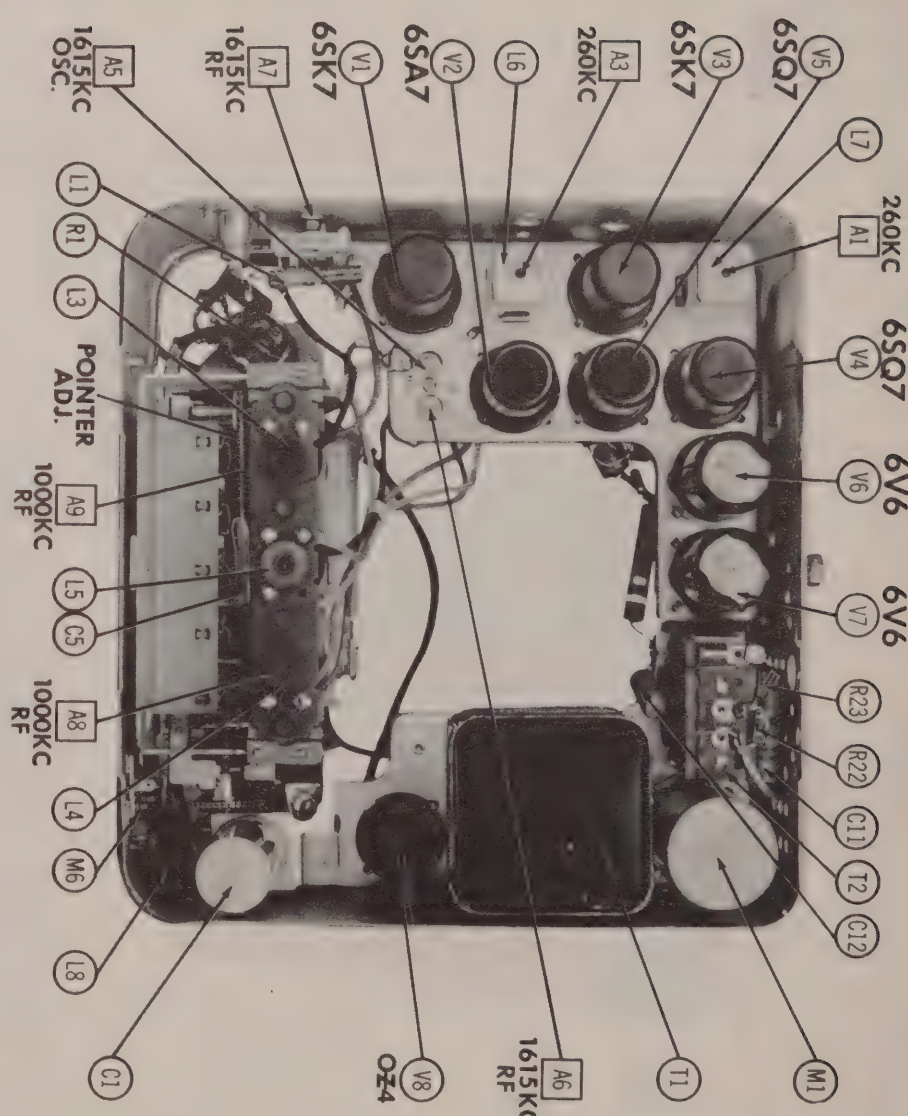
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PACKARD PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	2Meg	½	7260139			Volume control-Panel
B	250KΩ		Not Req.			Tone Control - Rear

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PACKARD PART No.	IRC PART No.	IDENTIFICATION CODES
R2	2.2Meg	½	A-225	BTS-2.2Meg	RF Amp. Grid
R3	15KΩ	1	B-153		RF Amp. Plate
R4	150Ω	½	A-151	BTS-150	RF Amp. Cathode
R5	330KΩ	½	A-334		Mixer Grid
R6	22KΩ	½	A-223		Osc. Grid
R7	15KΩ	2	C-153		Decoupling
R8	1Meg	½	A-105	BTS-1Meg	AVC Network
R9	270Ω	½	A-271	BTS-270	IF Amp. Cathode Se note 1.
R10	1Meg	½	A-105	BTS-1Meg	AVC Diode Load
R11	47KΩ	½	A-473	BTS-47K	Diode Det. Plate Load
R12	390Ω	½	A-391	BTS-390	AF Amp. Cathode
R13	6.8Meg	½	A-685	BTS-6.8Meg	AF Amp. Grid
R14	220KΩ	½	A-224	BTS-220K	AF Amp. Plate
R15	100KΩ	½	A-104	BTS-100K	Bleeder

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	PACKARD PART No.	IRC PART No.	
R16	390Ω	½	A-391	BTS-390	Phase Inverter Cathode
R17	1800Ω	½	7241616	BTS-1800	Phase Inverter Cathode
R18	220KΩ	½	A-224	BTS-220K	Audio Output Grid
R19	270KΩ	½	A-274	BTS-270K	Audio Output Grid
R20	220KΩ	½	A-224	BTS-220K	Phase Inverter Plate
R21	390Ω	2	1219690	BTB-390	Audio Output Cathode
R22	470Ω	½	A-471	BTS-470	Feedback Network
R23	3300Ω	½	A-332	BTS-3300	Feedback Network
R24	220Ω	1	B-221	BTS-220	Hash Suppression
R25	1800Ω	2	C-182	BTB-1800	Filter
R26	100KΩ	½	A-104	BTS-100K	Phase Inverter Grid

Note 1. Some models use a 390Ω resistor in this application.

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	PACKARD PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	6.3VDC ②4.2ADC	540VCT .062ADC			7255881	P-6473 ①	P-4079	VT-4

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PACKARD PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	8KΩ CT	4.3Ω	350Ω CT	.3Ω	7260167				

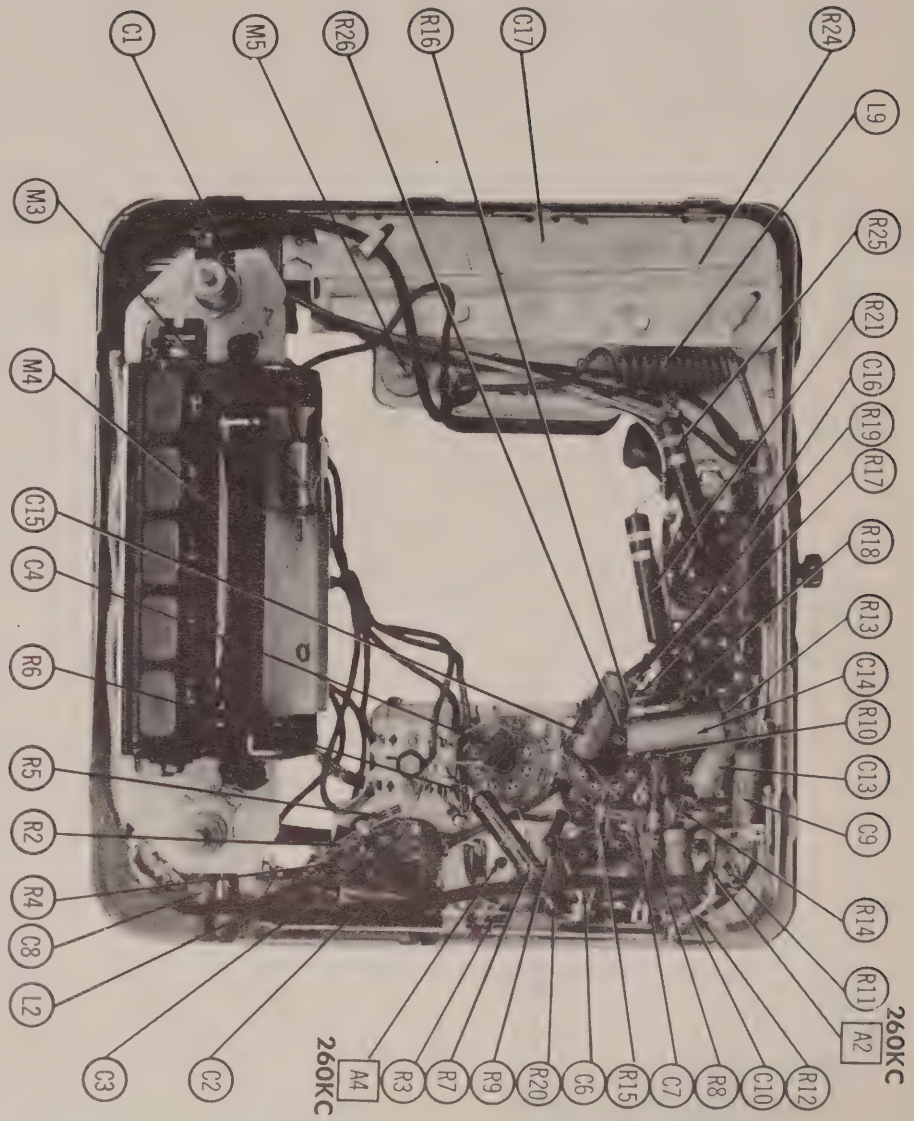
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	PACKARD PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	PM	4.3Ω	7261376 7260362 ②	ST-810 Mod. P69-V	69A2	② Alternate Speaker
	CONE DIA.	V. C. DIA.				
SP1B	6" x 9"	3/4"				

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	PACKARD PART No.	MERIT PART No.	IRC PART No.	
L1	Ant. Hash Choke	4Ω		7255738		CL-1	5.6 Microhenries
L2	Grid Choke	4.6Ω		7240251			
L3	Ant. Coil	9.8Ω		7258914			
L4	RF Coil	9.8Ω		7258914			
L5	Osc. Coil	1.2Ω	4.5Ω	7259687			
L6	Input IF	37Ω	34Ω	1219508			
L7	Output IF	37Ω	36Ω	1219509			
L8	Hash Choke	.1Ω		7259187			
L9	Fil. Choke	.1Ω		1217846			

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				PACKARD PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
M1	Interrupter	6.3	115∿	8542	5300	5300	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			PACKARD PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M2	SFE	14A	147685	7260148	307014	155014	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					PACKARD PART No.		
M3	Bayonet	6-8	.25	Blue	#44		Type #44

MISCELLANEOUS

ITEM No.	PART NAME	PACKARD PART No.	NOTES
M4	Tuner Unit		
M5	Spark Plate	7241259	
M6	Spark Plate	1217848	
A5	Dual Trimmer	7242454	Osc. Adj.
A6	Dual Trimmer	7242454	RF Adj.
A7	Trimmer	7260158	Ant. Adj.
	Dial	7260141	
	Pointer Assembly	7260199	
	Knob	7260187	Control
	Knob	7260149	Trimplate Control
	Lever	7260147	Tone Control

PUSHBUTTON ADJUSTMENTS

Since push buttons are mechanical any button may be set to any station within the Receivers Tuning Range.

1. Pull push button to the left and out.
2. Manually tune in desired station.
3. Push button all the way in.
4. Repeat this procedure for each button.

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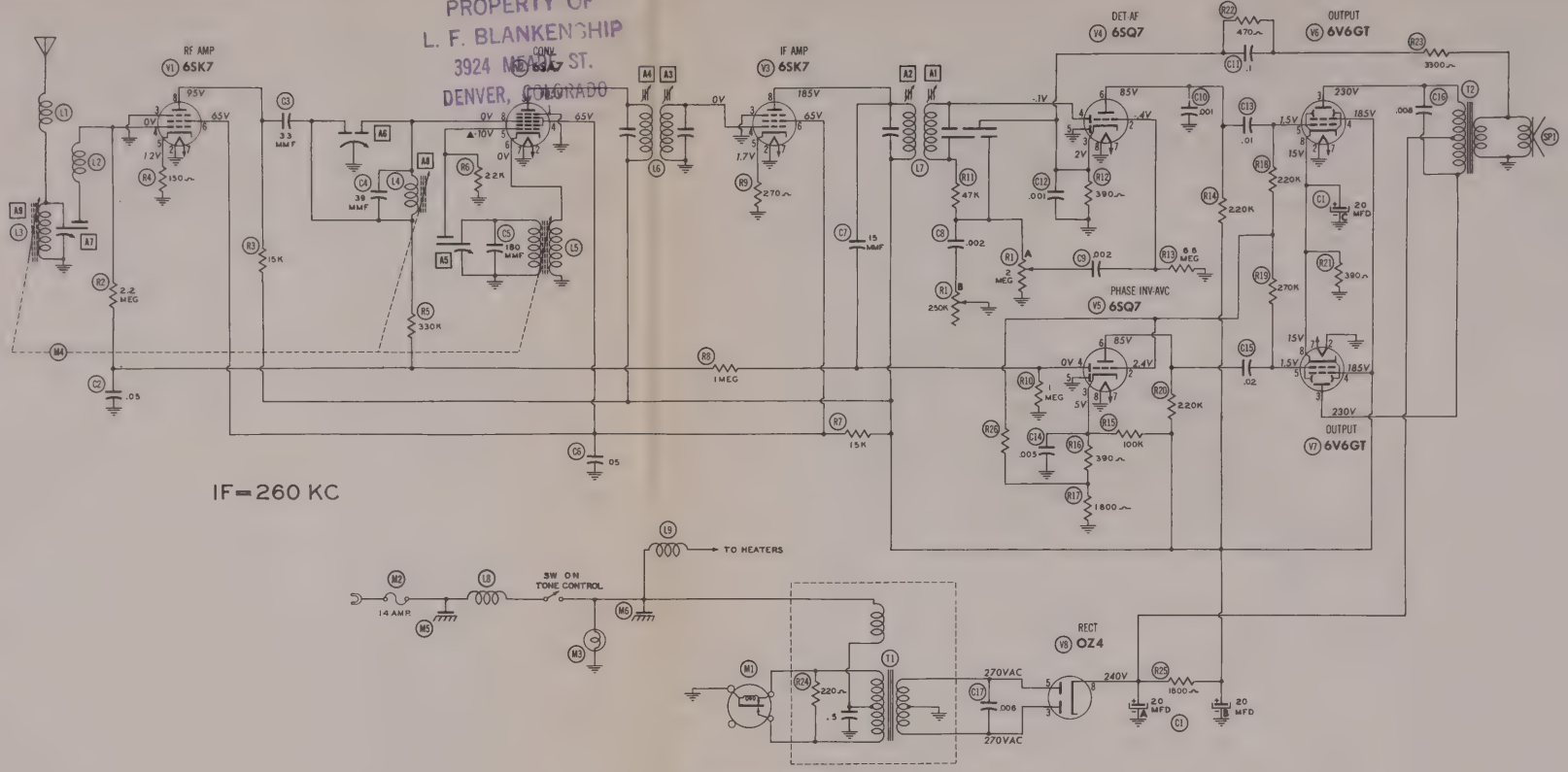

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SK7	0Ω	0Ω	0Ω	4.2Meg	150Ω	†17KΩ	.4Ω	†17KΩ
V 2	6SA7	0Ω	.4Ω	†1.8KΩ	†17KΩ	22KΩ	1.3Ω	0Ω	2.3Meg
V 3	6SK7	0Ω	0Ω	0Ω	31Ω	270Ω	†17KΩ	.4Ω	†1.8KΩ
V 4	6SQ7	0Ω	6.8Meg	390Ω	300KΩ	0Ω	†220KΩ	.4Ω	0Ω
V 5	6SQ7	0Ω	100KΩ	2.2KΩ	1Meg	0Ω	†220KΩ	.4Ω	0Ω
V 6	6V6GT	0Ω	0Ω	†125Ω	†1.8KΩ	320KΩ	1.8KΩ	.4Ω	390Ω
V 7	6V6GT	0Ω	0Ω	†125Ω	†1.8KΩ	370KΩ	Inf.	.4Ω	390Ω
V 8	0Z4	0Ω	Inf.	280Ω	Inf.	280Ω	Inf.	Inf.	80KΩ

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 8 OF V8

1 - DC Voltage measurements are at 20,000 ohms per volt, DC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

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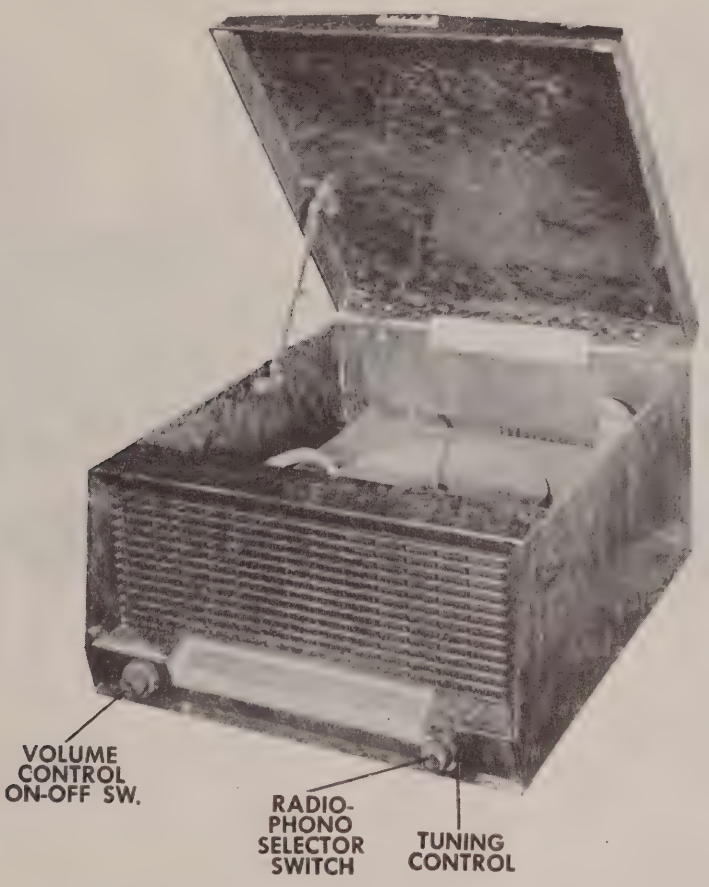
PHILCO
MODEL 52-1340 (CODES 121, 122)



PHILCO
MODEL 52-1340 (CODES 121, 122)

TRADE NAME	Philco Model 52-1340 (Code 121 & 122)
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	AC Operated Radio-Phonograph Combination Receiver with Loop Antenna
TUBES (FIVE)	Types 7A8 Converter, 7B7 IF Amp., 7C6 Det.-AVC-AF Amp., 35L6GT Audio Output, 50Y7GT Rectifier
POWER SUPPLY	105-120 Volts AC — RATING .30 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning gang fully closed, and set pointer to last reference mark at left side of dial backplate.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to rear stator fo tuning gang. Low side to B-.	455KC (400~ mod)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1600KC	Set pointer to last calibration mark at right side of dial backplate.	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1500KC	Tune for max. output.	"	A6	Adjust for maximum output.

FOR SERVICE INFORMATION ON PHILCO RECORD CHANGER UNIT M-22 SEE PHOTOFACT SET #140 - FOLDER 6

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PARTS LIST AND DESCRIPTIONS

PHILCO
MODEL 52-1340

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		PHILCO PART No.	STANDARD REPLACEMENT		
V1	Converter	7A8	7A8	8U	
V2	IF Amp.	7B7	7B7	8V	
V3	Det.-AVC-AF. Amp.	7C6	7C6	8W	
V4	Audio Output	35L6GT	35L6GT	7AC	
V5	Rect.	50Y7GT	50Y7GT	8AN	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1	20	150	30-2568-22	E3A38 .		UPE2215		TVL-1405	Voltage Doubler
C2A	40	250	30-2575-32	E58C36		EDL4425C		TVL-4575	Filter (orange)
B	40	250				BR4015A			Filter (red)
C	40	150							Decoupling (blue)
D	25	25							Output Cathode (yellow)
C3	5		30-1230	SI5	TCZ-4.7	5W5V5	GP1K-050	MS-55	RF Coupling
C4	.1	200	61-0113	P288-1	DF-104	PTE4P1		2TM-P1	AVC Filter
C5	47	500	60-00515307	1469-00005		5R5Q5		MS-45	Osc. Grid Cap.
C6	7.5		30-1224-65				NP0K-7R5		Fixed Trimmer
C7	.05	200	61-0112	P288-05	DF-503	PTE4S5		2TM-S5	IF Amp. Cathode
C8	.1	200	61-0113	P288-1	DF-104	PTE4P1		2TM-P1	RF Bypass
C9	47	500	60-00515307	1468-00005	D6-470	5W5Q5	GP1K-470	1FM-45	Tone Comp.
C10	.0047	200	45-3505-56	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Tone Comp.
C11	.01	200	61-0120	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C12A	220		30-1239-4	SI220	D6-221	5W5T25	GP2K-221	5GA-T22	AF Amp. Plate
B	.007			SI6800	D6-682	1D3D7	GP2-333-682	5HK-D68	Audio Coupling
C13	.0047	600	45-3505-56	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Audio Output Plate
C14	.04	400	30-1226-17	P688-04		PTE6S4		6TM-S4	Line Filter
C15	.1	400	60-0113	P488-1	DF-104	PTE4P1		4TM-P1	Line Isolation

CONTROLS

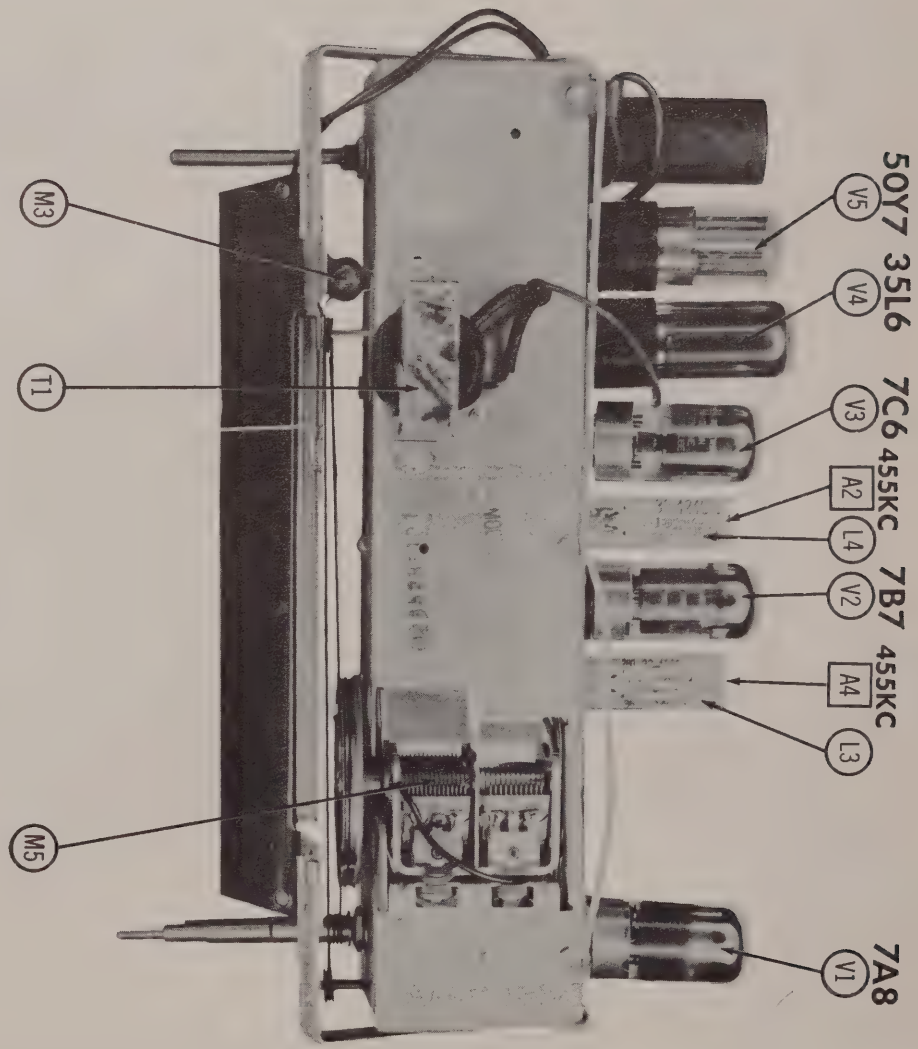
ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	2Meg	½	33-5564-11	Q18-139X	AT116	BT-82-S	Volume Control- Tap ⓐ 1Meg
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R1A per instructions.
C	Switch		Not Req.	76-1	SWA	Not Req.	Attach to R1A per instructions.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	
R2	150KΩ	½	66-4158340	BTS-150K	Antenna Isolation
R3	100KΩ	½	66-4108340		Mixer Grid
R4	150KΩ	½	66-4158340		Line Isolation
R5	180Ω	½	66-1188340	BTS-180	IF Amp. Cathode
R6	27KΩ	½	66-3278340	BTS-27K	IF Amp. Screen
R7	47KΩ	½	66-3478340	BTS-47K	Diode Det. Plate Load
R8	2.2Meg	½	66-5228340	BTS-2.2Meg	AVC Network
R9	470KΩ	½	66-4478340	BTS-470K	Diode Load
R10	10Meg	½	66-6108340	BTS-10Meg	AF Amp. Grid
R11	470KΩ	½	66-4478340	BTS-470K	AF Amp. Plate
R12	470KΩ	½	66-4478340	BTS-470K	Audio Output Grid
R13	200Ω	1	66-1184340	BTA-200	Audio Output Cathode
R14	68KΩ	½	66-3688340	BTS-68K	Tone Compensation
R15	♦	½	33-1343-3		Surge Limiter
R16	270Ω	2	33-1335-91	BW-2-270	Filter- Wire Wound
R17	5000Ω	2	33-1335-95	BW-2-5000	Filter- Wire Wound

♦ This resistor is a special unit. At room temperature it measures approx. 880Ω. At operating temperature it measures approx. 100Ω.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	PHILCO PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	P. M.	3.4Ω	36-1639-2	ST-803	52A1	③ Alternate speaker used in some models.
SP2A	P. M.	3.4Ω	36-1639-1 ③	Mod. P525-V ST-803 Mod. P525-V	52A1	
	CONE DIA.	V. C. DIA.				
SP1B	5 1/8 in.	9/16 in.				
SP2B	5 1/8 in.	9/16 in.				

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1A	4KΩ	3.4Ω	480Ω	.7Ω	32-8242-10	A-3877 ①	A-3018	R0-2 ①	① Use mounting holes provided ② Alternate transformer used in some models.
B	2.4KΩ	3.4Ω	220Ω	.6Ω	32-8384 ②	A-3025	A-3332	R0-2	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	PHILCO PART No.	MERIT PART No.	
L1	Loop Ant.	3.6Ω		76-2127-14		
L2	Osc. Coil	2.6Ω	7Ω	32-4263		
L3	Input IF	10.7 Ω	10.7Ω	32-4160A	BC-352	
L4	Output IF	14.8Ω	15.5Ω	32-4240A		

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA						REMARKS
	PHILCO PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	76-4649							

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	PHILCO PART No.	WALCO PART No.	JENSEN PART No.	
M2	45-9588	W-46TPS	PH-12 or PH-13	

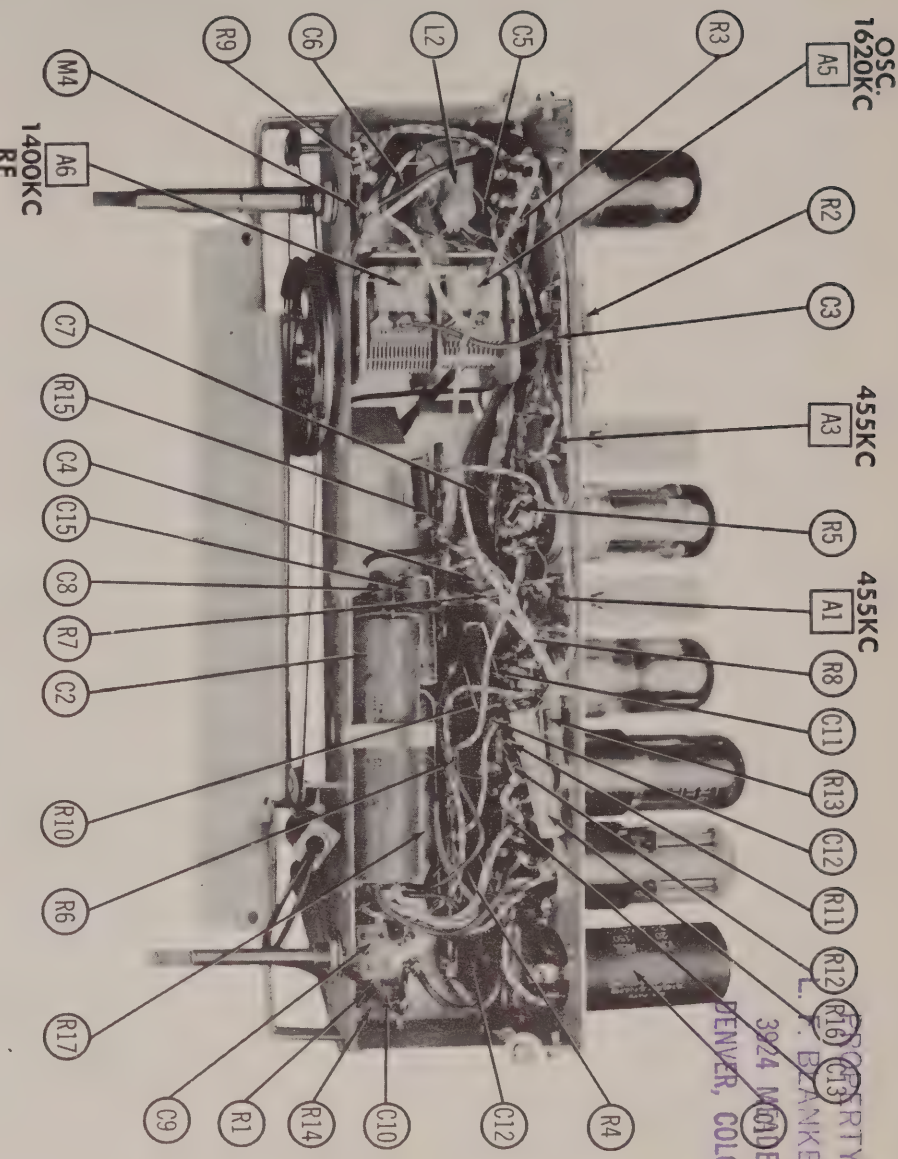
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					PHILCO PART No.		
M3	Bayonet	6-8	.25	Blue	34-2064		Type No. 44

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M4	Switch	42-1949	Radio-Phono
M5	2 Gang Var. Cap.	31-2751-9	(21-492MMF, 18-167MMF)
	Cabinet	10840-2	(Code 121)
	Cabinet	10840-6	(Code 122)
	Dial Scale	54-5107	
	Pointer	56-5630-31	
	Knob	54-4843	Volume-On/Off
	Knob	54-4842	Radio-Phono Sw.
	Knob	54-4841	Tuning

CHASSIS—BOTTOM VIEW



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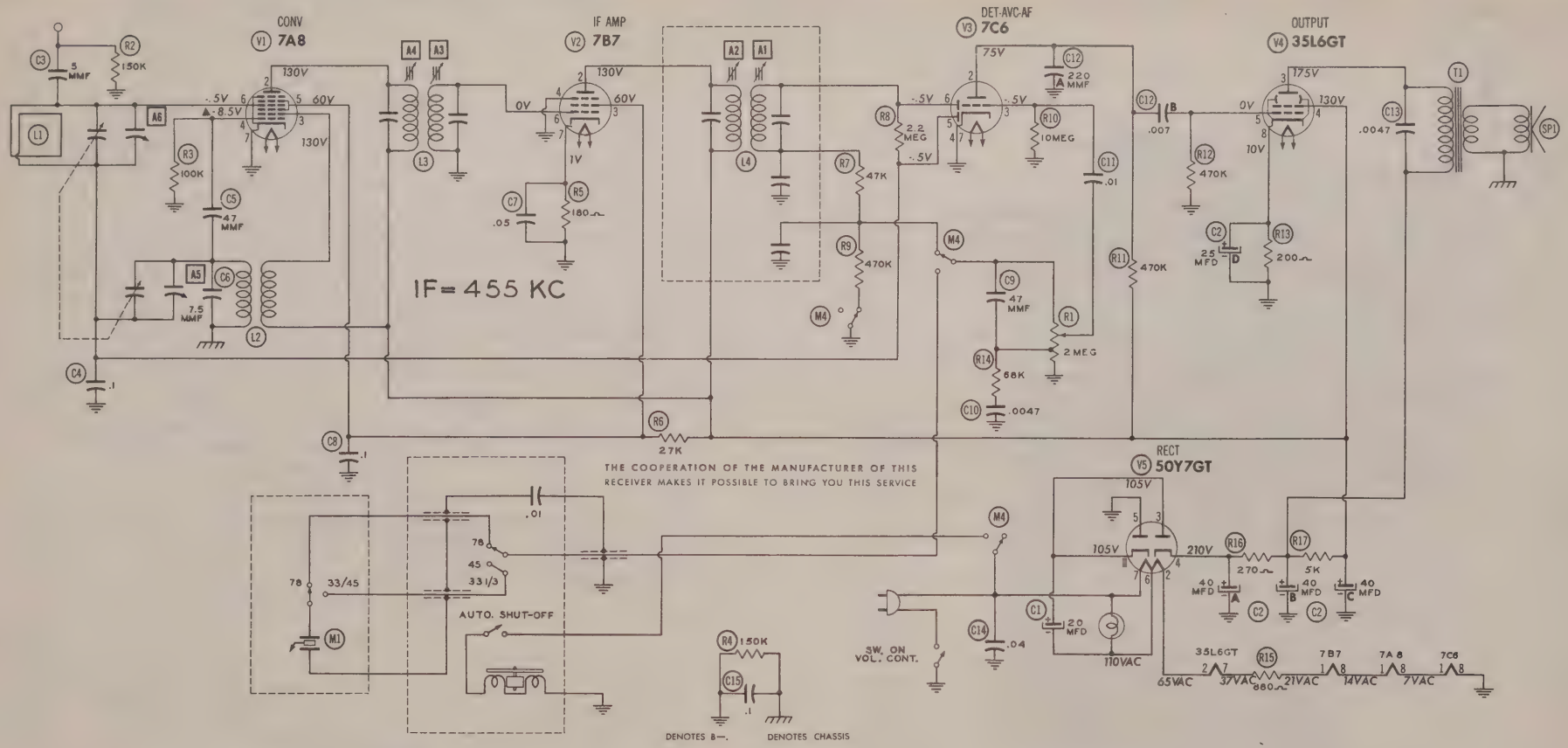
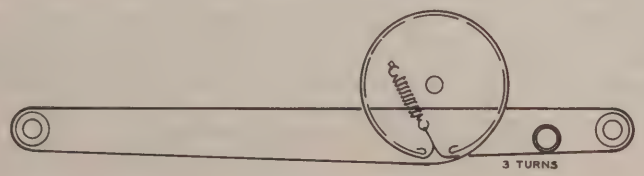
PHILCO MODEL 52-1340



TUNING GANG FULLY CLOSED



DIAL CORD DRIVE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	7A8	14Ω	†5.2KΩ	†5.2KΩ	100KΩ	†32KΩ	2.6Meg	0Ω	7Ω
V 2	7B7	21Ω	†5.2KΩ	†32KΩ	0Ω	0Ω	12Ω	180Ω	14Ω
V 3	7C6	7Ω	†475KΩ	10Meg	0Ω	2.6Meg	380KΩ	0Ω	0Ω
V 4	35L6GT	0Ω	156Ω	†750Ω	†5.2KΩ	470KΩ	†270Ω	121Ω	180Ω
V 5	50Y7GT	INF	156Ω	3Meg	90KΩ	0Ω	176Ω	206Ω	3Meg

ALL MEASUREMENTS TAKEN IN RADIO POSITION ONLY
† MEASURED FROM PIN 4 OF V5
▲ TAKEN WITH VACUUM TUBE VOLTMETER

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

PHILHARMONIC MODELS 5000, 5200, 5201 5250, 5400, 5401, 5450, 5600, 5601, 5650 5700, 5700RT, 5701, 5750, 5750RT, 5800

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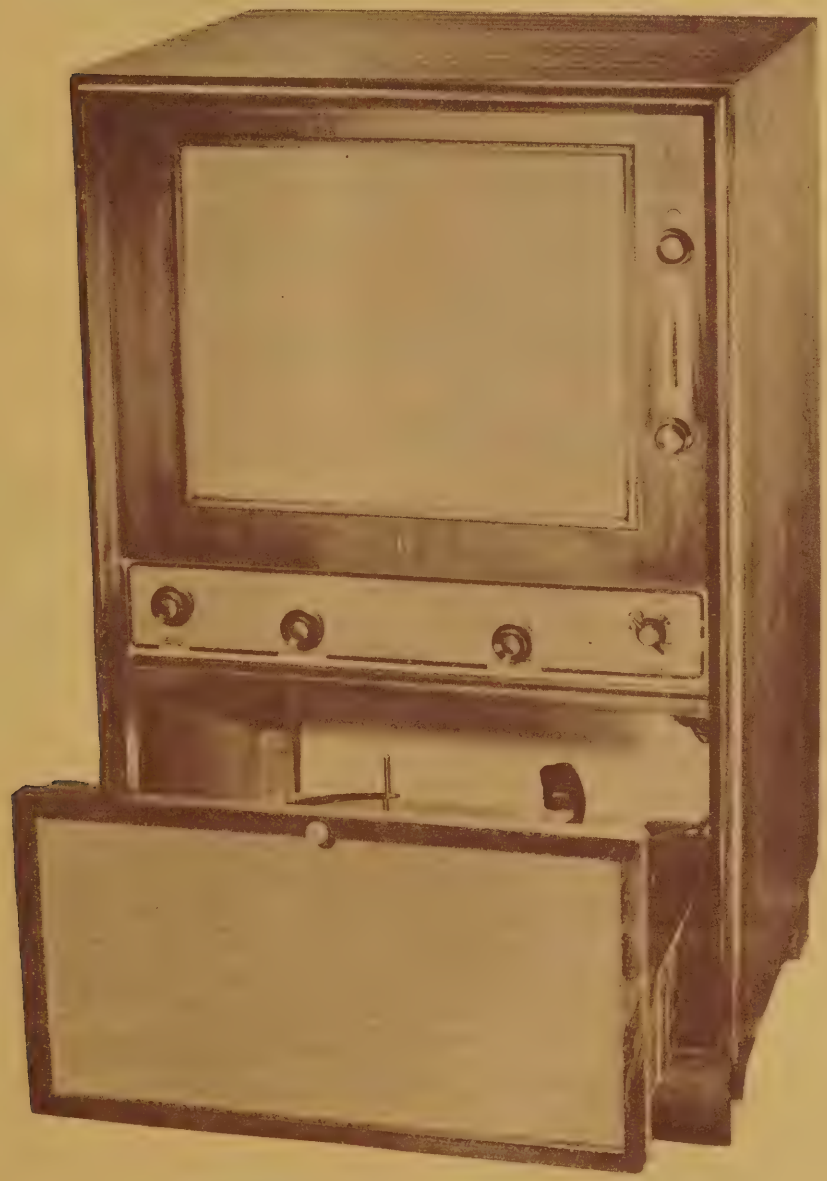

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DATE 2-52 SET 160 FOLDER 9

PHOTOFACT* Folder

PHILHARMONIC MODELS 5000, 5200, 5201, 5250, 5400, 5401, 5450, 5600, 5601, 5650, 5700, 5700RT, 5701, 5750, 5750RT, 5800

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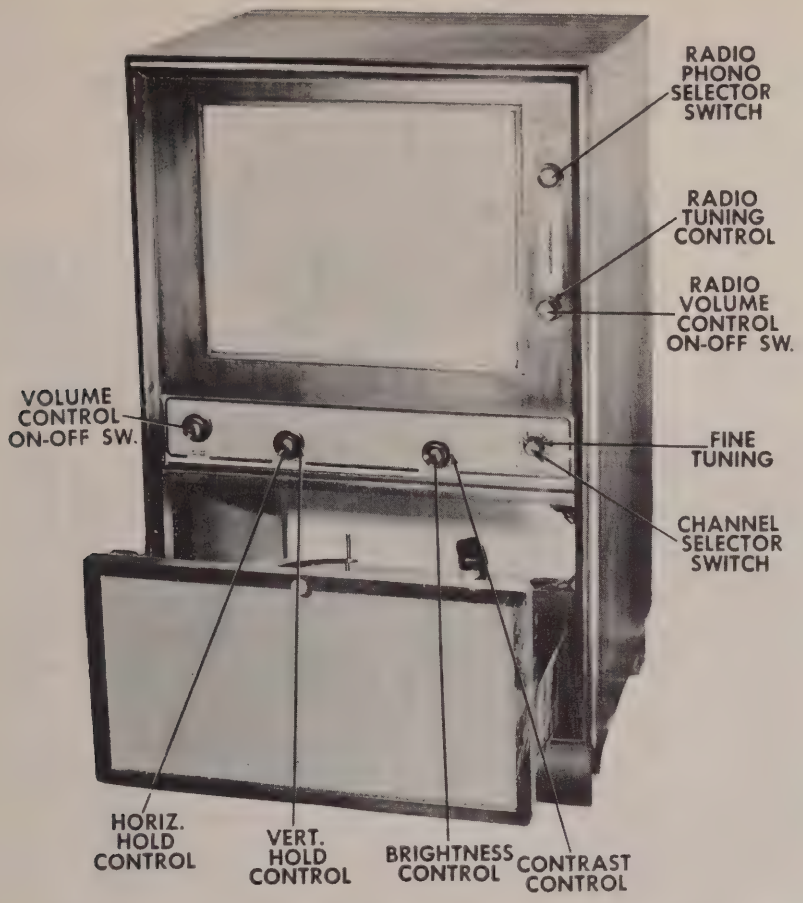
DENVER, COLORADO



PHILHARMONIC MODELS 5000, 5200, 5201, 5250, 5400, 5401, 5450, 5600, 5601, 5650, 5700, 5700RT, 5701, 5750, 5750RT, 5800

TRADE NAME	Philharmonic Models 5000, 5200, 5201, 5250, 5400, 5401, 5450, 5600, 5601, 5650, 5700, RT, 5701, 5750, RT, 5800
MANUFACTURER	Philharmonic Radio & Television Corp. 235 Jersey Ave., New Brunswick, N. J.
TYPE SET	TV-Radio-PhonoCombination Receiver (Some models "TV" only)
TUBES	Twenty Four (Combination Receivers) Nineteen ("TV Only" Receivers)
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING 1.8Amp. @ 117 Volts AC (TV)
TUNING RANGE-	TV Channels 2 thru 13 Radio 550-1700KC — .26Amp. @ 117 Volts AC (Radio)

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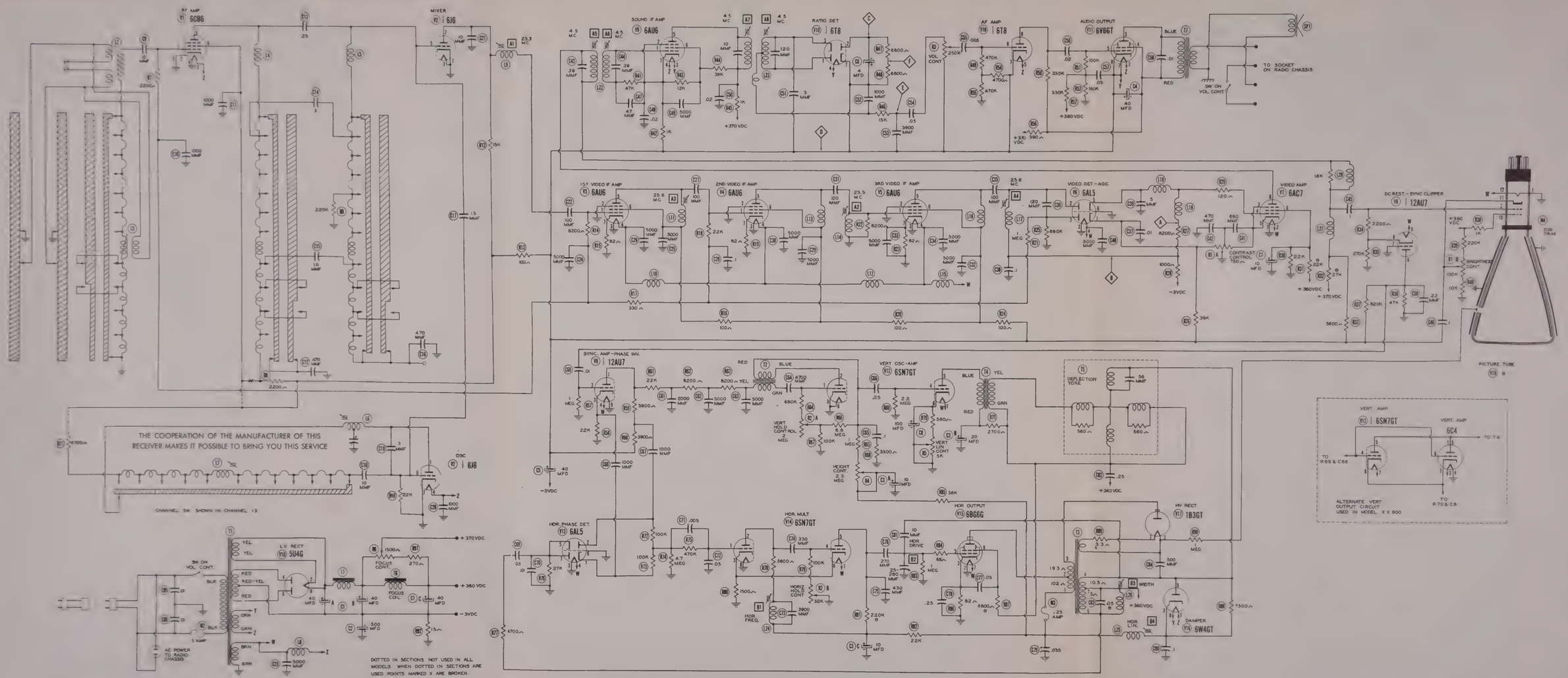
RF AMP V1 6CB6
MIXER V2 6J6
OSC V7 6J6
SOUND IF AMP V9 6AU6
RATIO DET V10 6T8
AF AMP V10 6T8
AUDIO OUTPUT V11 6V6GT
1ST VIDEO IF AMP V13 6AU6
2ND VIDEO IF AMP V14 6AU6
3RD VIDEO IF AMP V15 6AU6
VIDEO DET - AGC V5 6AL5
VIDEO AMP V7 6AC7
DC REST - SYNC CLIPPER V8 12AU7
SYNC. AMP - PHASE INV. V10 12AU7
VERT OSC - AMP V12 6SN7GT
HOR. PHASE DET. V13 6AL5
HOR. MULT V14 6SN7GT
HOR OUTPUT V15 6BG6G
HV RECT V17 1B3GT
DAMPER V16 5W4GT
LV RECT V18 5U4G
PICTURE TUBE V15
DEFLECTION YOKE
TO SOCKET ON RADIO CHASSIS
SW. ON VOL. CONT.
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
CHANNEL SW. SHOWN IN CHANNEL 13
AC POWER TO RADIO CHASSIS
+370 VDC
+360 VDC
-3VDC
+330 VDC
VERT. AMP V12 6SN7GT
VERT. AMP 6C4
TO T4
TO R89 & C66
ALTERNATE VERT OUTPUT CIRCUIT USED IN MODEL X X 900
TO R70 & C8

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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DOTTED IN SECTIONS NOT USED IN ALL MODELS. WHEN DOTTED IN SECTIONS ARE USED POINTS MARKED X ARE BROKEN.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

PHILHARMONIC MODELS 5000, 5200, 5201, 5250, 5400, 5401, 5450, 5600, 5601, 5650, 5700, 5700RT, 5701, 5750, 5750RT, 5800

PHILHARMONIC MODELS 5000, 5200, 5201, 5250, 5400, 5401, 5450, 5600, 5601, 5650, 5700, 5700RT, 5701, 5750, 5750RT, 5800

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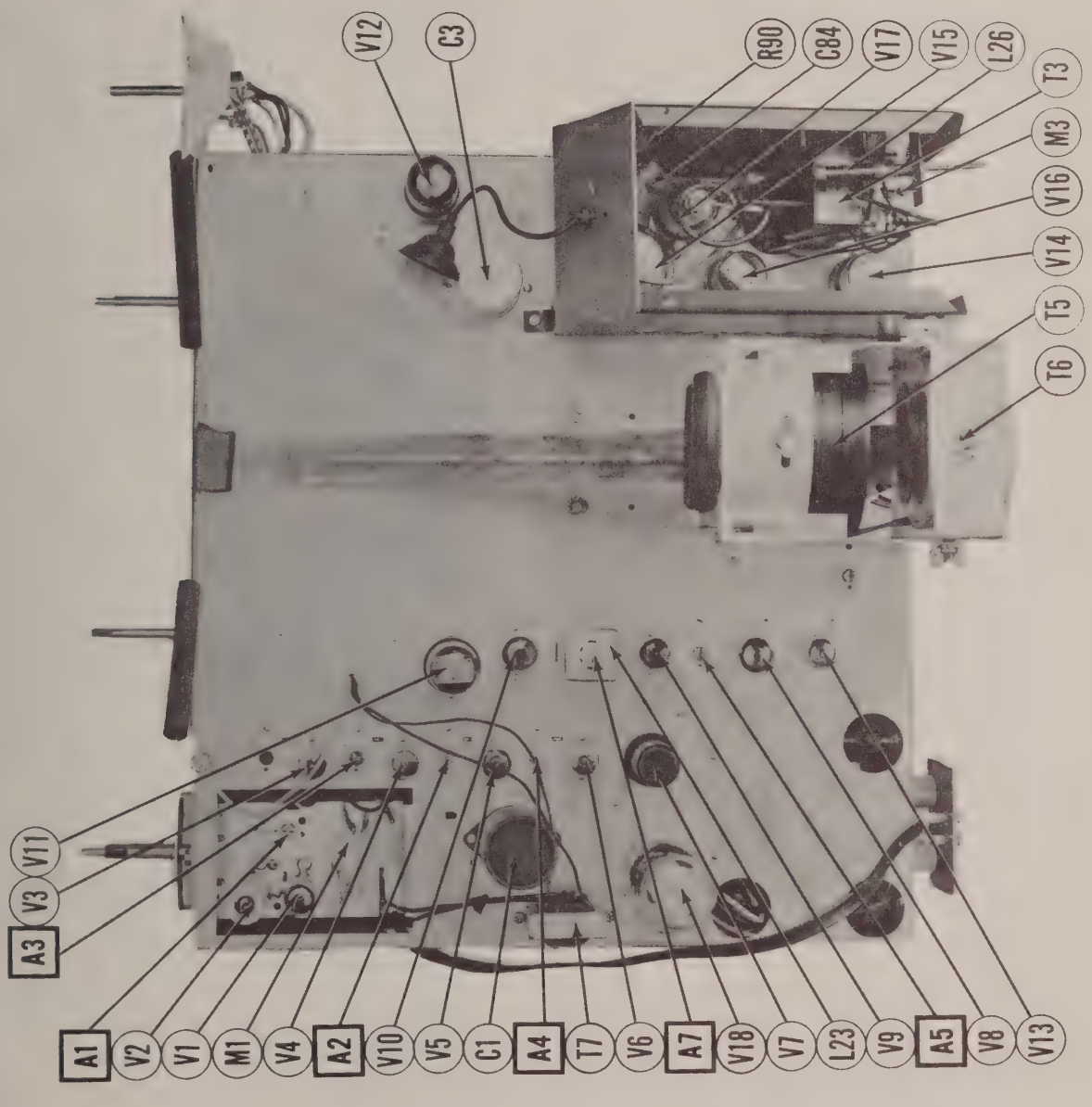
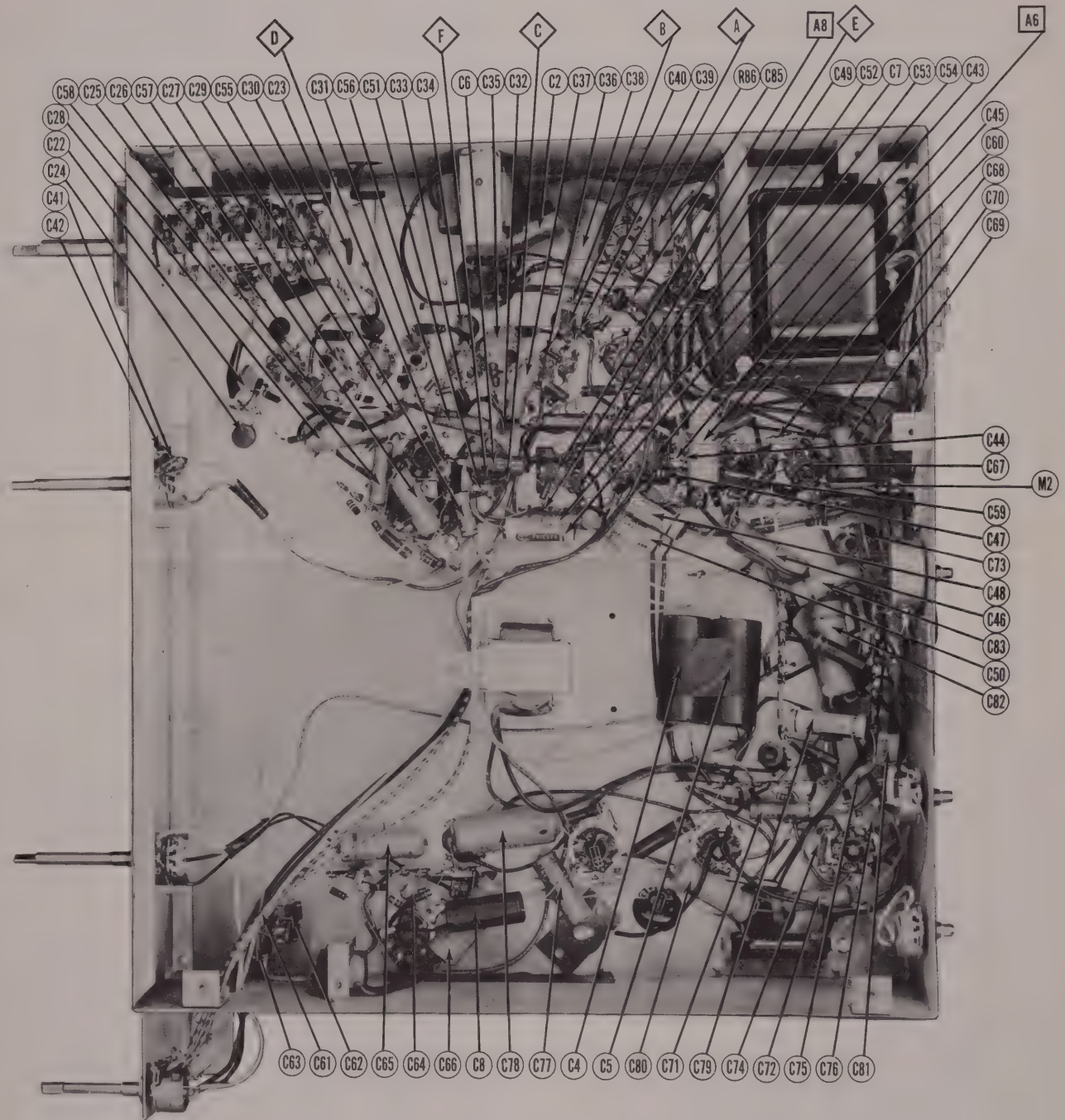


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

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PHILHARMONIC MODELS 5000, 5200, 5201, 5250, 5400, 5401, 5450, 5600, 5601, 5650, 5700, 5700RT, 5701, 5750, 5750RT, 5800

TUBE PLACEMENT CHART

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TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If receiver is to be aligned with the picture tube removed the high voltage lead should be securely taped and dressed away from the chassis.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 with pin 1 removed to prevent erroneous indication.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	23.3MC (Unmod.)	Any	DC Probe to Point (A). Common to Point (B).	A1, A2	Adjust for maximum deflection. Attenuate signal generator to maintain a maximum 1 volt reading.
2.	Direct	"	25.6MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	24MC (10MC SWP)	21.6MC 23MC 23.5MC 25.6MC 26.1MC	Any	Vert. Amp. to Point (A). Low side to chassis.		Check for response curve similar to figure 1. The 23MC and 26.1MC should be at 50% response. If necessary, slightly retouch A1 thru A4 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

It should be noted that the common lead of the VTVM is at a potential of approximately 140 volts with respect to chassis; avoid touching or grounding the VTVM case.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to pin 4 (Grid) of 6AC7 (V7). Low side to chassis.	4.5MC (Unmod.)	Any	DC Probe to Point (C). Common to Point (D).	A5, A6, A7	Adjust for maximum output.
5.	.01MFD	"	"	"	DC Probe to Point (E). Common to Point (F).	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.01MFD	High side to pin 4 (Grid) of 6AC7 (V7). Low side to chassis.	4.5MC (450KC Sweep)	4.5MC	Any	Vert. Amp. to Point (C). Low side to chassis.	A5, A6, A7	Disconnect stabilizer capacitor C6. Adjust for maximum amplitude and symmetry as per figure 2.
5.	.01MFD	"	"	"	"	Vert. Amp. to Point (E). Low side to chassis.	A8	Reconnect capacitor C6. Adjust A8 to place 4.5MC at center of crossover lines as per figure 3. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

THE RF TUNER PORTION OF THIS RECEIVER HAS BEEN PRE-ALIGNED AT THE FACTORY AND IS VERY STABLE, AND WILL NOT NORMALLY REQUIRE ADJUSTMENT IN THE FIELD.

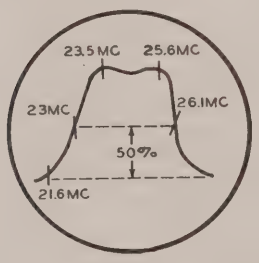

FIG. 1

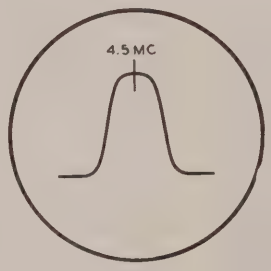

FIG. 2

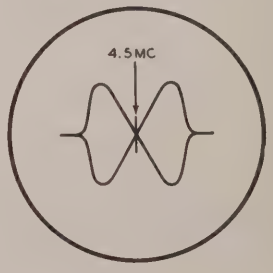

FIG. 3

RADIO ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set pointer 1 11/16" from center of Phono-Radio switch shaft.
Turn the Phono-Radio switch to the radio position (fully clockwise).
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
6.	.01MFD	High side to pin 7 (Grid) of 12BE6 (V20). Low side to chassis.	455KC (400 ∿ Mod.)		Tuning gang fully open	Across voice coil	A9, A10, A11, A12	Adjust for maximum output.
7.	.01MFD	"	1700KC		"	"	A13	"
8.		Loop	1400KC		Tune for max. output	"	A14	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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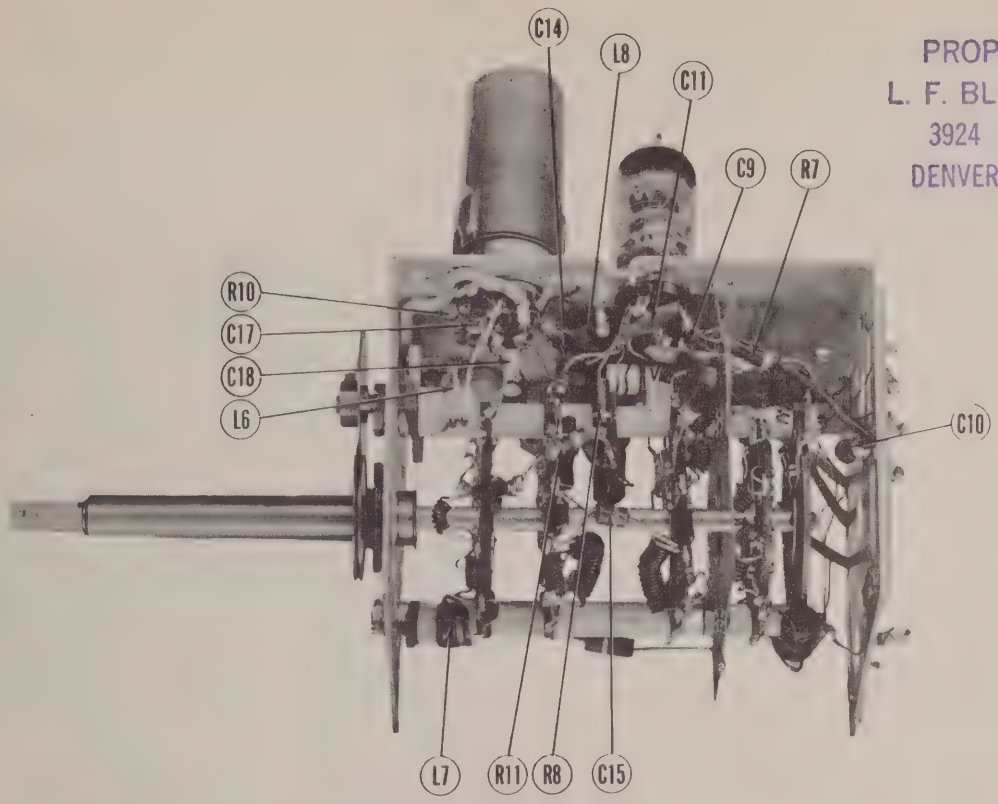
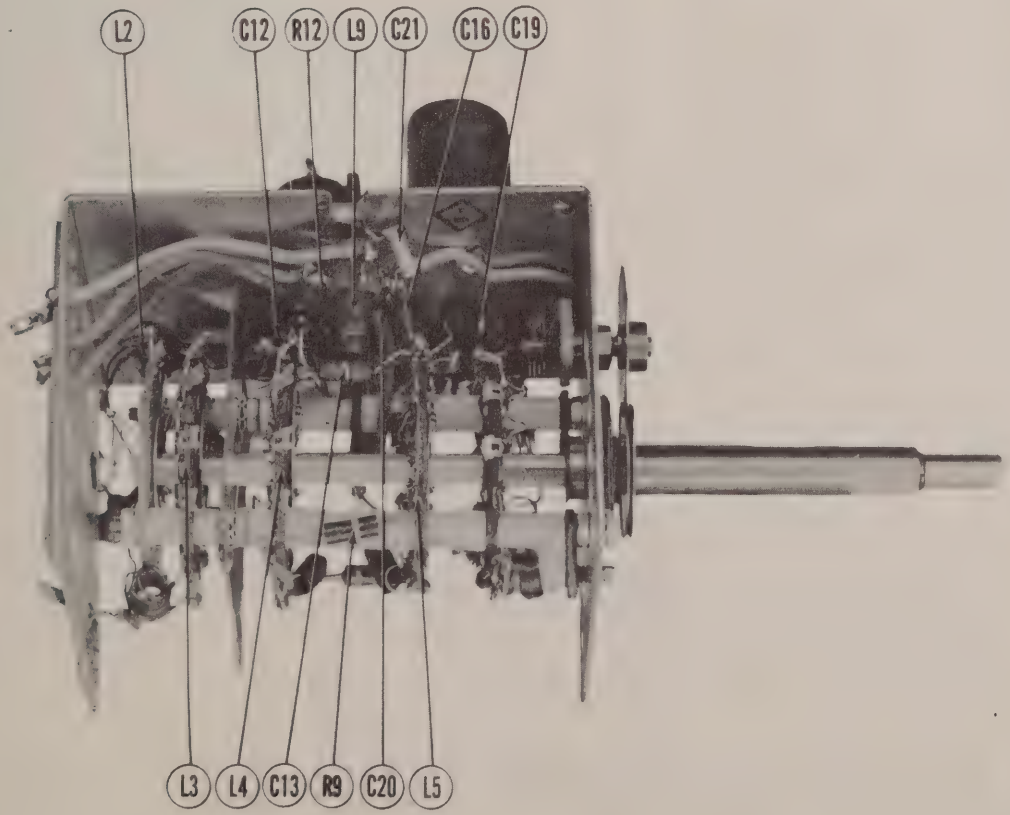


RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	-.4VDC	0V.	6.3VAC	0V.	90VDC	90VDC	0V.		
V 2	6J6	80VDC	70VDC	0V.	6.3VAC	-.6VDC	§-2.8VDC	0V.		
V 3	6AU6	-.4VDC	0V.	0V.	6.3VAC	125VDC	125VDC	.6VDC		
V 4	6AU6	-.4VDC	0V.	0V.	6.3VAC	125VDC	125VDC	.6VDC		
V 5	6AU6	0V.	0V.	0V.	6.3VAC	130VDC	130VDC	1.2VDC		
V 6	6AL5	.1VDC	-3VDC	0V.	6.3VAC	-2.8VDC	0V.	-.4VDC		
V 7	6AC7	0V.	6.3VAC	1.3VDC	-2.8VDC	1.3VDC	180VDC	0V.	170VDC	
V 8	12AU7	130VDC	0V.	8VDC	6.3VAC	6.3VAC	5.8VDC	0V.	1.2VDC	0V.
V 9	6AU6	#5.3VDC	#8VDC	#0V.	#6.3VAC	#230VDC	#60VDC	#8VDC		
V 10	6T8	#-.2VDC	#-.4VDC	#-.2VDC	#0V.	#6.3VAC	#0V.	#0V.	#-.6VDC	#105VDC
V 11	6V6GT	0V.	#6.3VAC	#200VDC	#220VDC	-8.5VDC	0V.	#0V.	#0V.	
V 12	6SN7GT	-4.4VDC	215VDC 100VDC	0V.	0V.	330VDC	7.6VDC 18VDC	6.3VAC	0V.	
V 13	6AL5	1.4VDC	-1.4VDC	0V.	6.3VAC	0V.	0V.	0V.		
V 14	6SN7GT	.2VDC	250VDC	11VDC	-5.2VDC	110VDC	11VDC	6.3VAC	0V	
V 15	6BG6G	-2.2VDC	0V.	10VDC	0V.	-2.2VDC	0V.	6.3VAC	290VDC	TOP CAP *
V 16	6W4GT	0V.	0V.	440VDC	0V.	360VDC	0V.	#6.3VAC	#0V.	
V 17	1B3GT	* DO NOT MEASURE.								
V 18	5U4G	0V.	390VDC	0V.	360VAC	0V.	360VAC	0V.	390VDC	
V 19	16JP4	0V.	1.1VDC	PIN 10 360VDC	PIN 11 130VDC	PIN 12 6.3VAC				

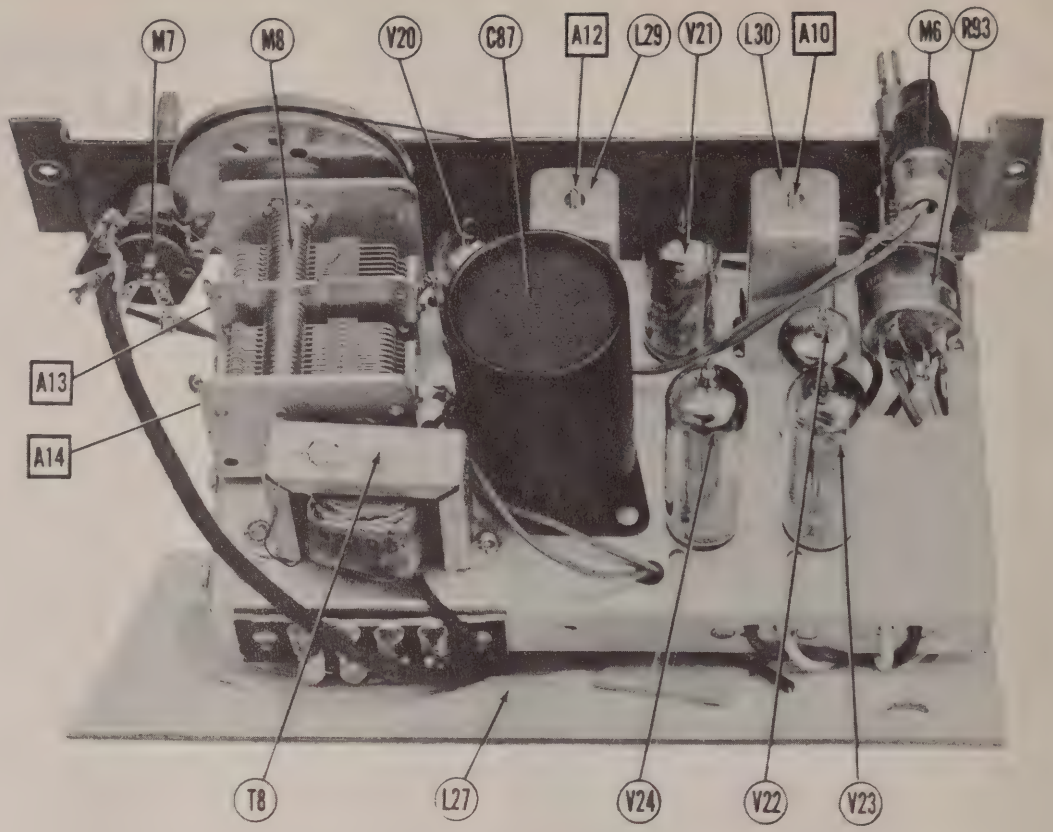
FOCUS CONTROL SET FULLY COUNTERCLOCKWISE.
§ TAKEN WITH VACUUM TUBE VOLTMETER.
# MEASURED FROM PIN 8 OF V11.
* DO NOT MEASURE.

RESISTANCE READINGS

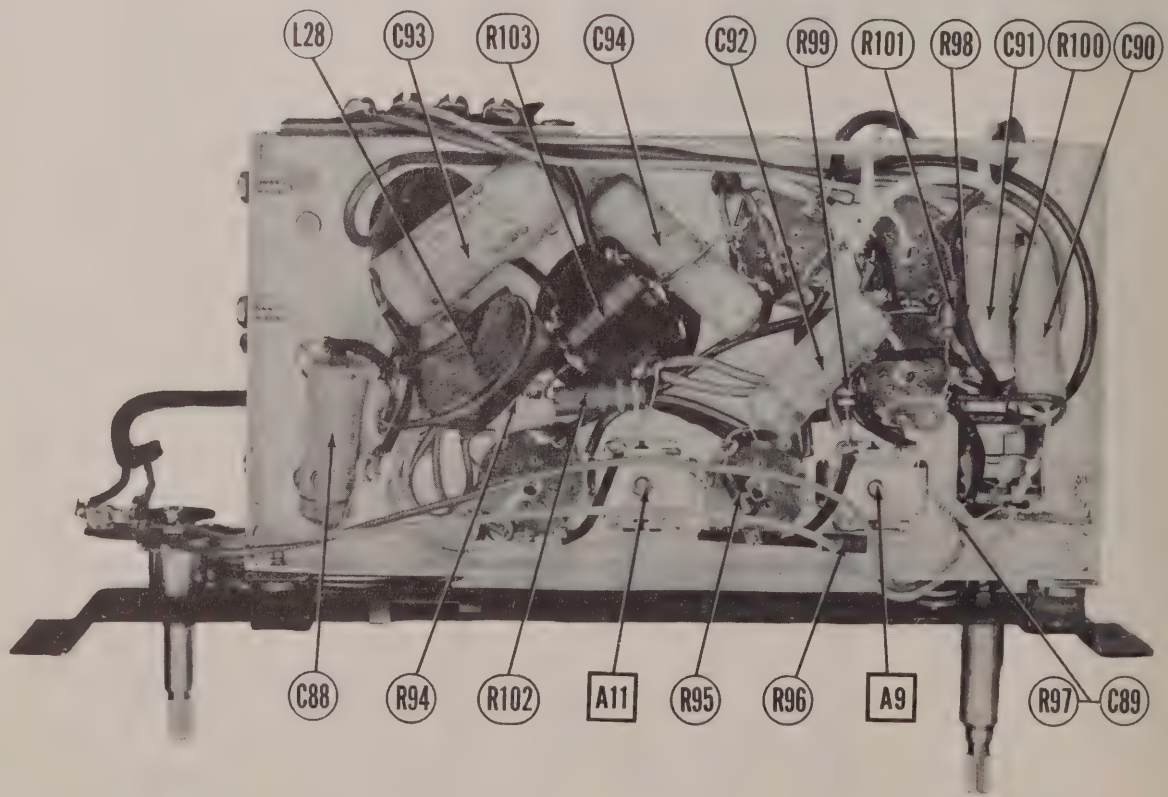
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	1.7 Meg.	0Ω	.1Ω	0Ω	#2.3KΩ	#2.3KΩ	0Ω		
V 2	6J6	#4.8KΩ	#15KΩ	0Ω	.1Ω	220KΩ	22KΩ	0Ω		
V 3	6AU6	1.7 Meg.	0Ω	0Ω	.1Ω	#300Ω	#300Ω	82Ω		
V 4	6AU6	1.7 Meg.	0Ω	0Ω	.1Ω	#200Ω	#200Ω	82Ω		
V 5	6AU6	.1Ω	0Ω	0Ω	.1Ω	#100Ω	#100Ω	82Ω		
V 6	6AL5	1Ω	1000Ω	0Ω	.1Ω	9.2KΩ	0Ω	680KΩ		
V 7	6AC7	Inf.	.1Ω	750Ω	9.3KΩ	750Ω	†16KΩ	†14KΩ		
V 8	12AU7	#8KΩ	1 Meg.	22KΩ	.1Ω	.1Ω	47KΩ	0Ω	270KΩ	0Ω
V 9	6AU6	#48KΩ	#1000Ω	#0Ω	#.1Ω	†1.9KΩ	†18KΩ	#1000Ω		
V 10	6T8	Inf.	#14KΩ	Inf.	#0Ω	#.1Ω	#0Ω	#0Ω	#475KΩ	†330KΩ
V 11	6V6GT	Inf.	#.1Ω	†930Ω	†500Ω	280KΩ	Inf.	#0Ω	#0Ω	
V 12	6SN7GT	2.8 Meg.	†1 Meg. †3.5 Meg.	0Ω	2.2 Meg.	†3.7KΩ	5.6KΩ 560Ω	.1Ω	0Ω	
V 13	6AL5	4.8 Meg.	4.8 Meg.	0Ω	.1Ω	27KΩ	0Ω	27KΩ		
V 14	6SN7GT	5 Meg.	†35KΩ	1.5KΩ	150KΩ	†250KΩ	1.5KΩ	.1Ω	0Ω	
V 15	6BG6G	1 Meg.	0Ω	82Ω	Inf.	1 Meg.	Inf.	.1Ω	†7KΩ	TOP CAP †8KΩ
V 16	6W4GT	Inf.	Inf.	†7.7KΩ	Inf.	†170Ω	Inf.	#.1Ω	#0Ω	
V 17	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP †8.2KΩ
V 18	5U4G	Inf.	20KΩ	Inf.	45Ω	Inf.	45Ω	Inf.	20KΩ	
V 19	16JP4	0Ω	270KΩ	PIN 10 †1.2KΩ	PIN 11 90KΩ	PIN 12 .1Ω				

FOCUS CONTROL SET FULLY COUNTERCLOCKWISE.
† MEASURED FROM PIN 2 OF V18.
# MEASURED FROM PIN 8 OF V11.

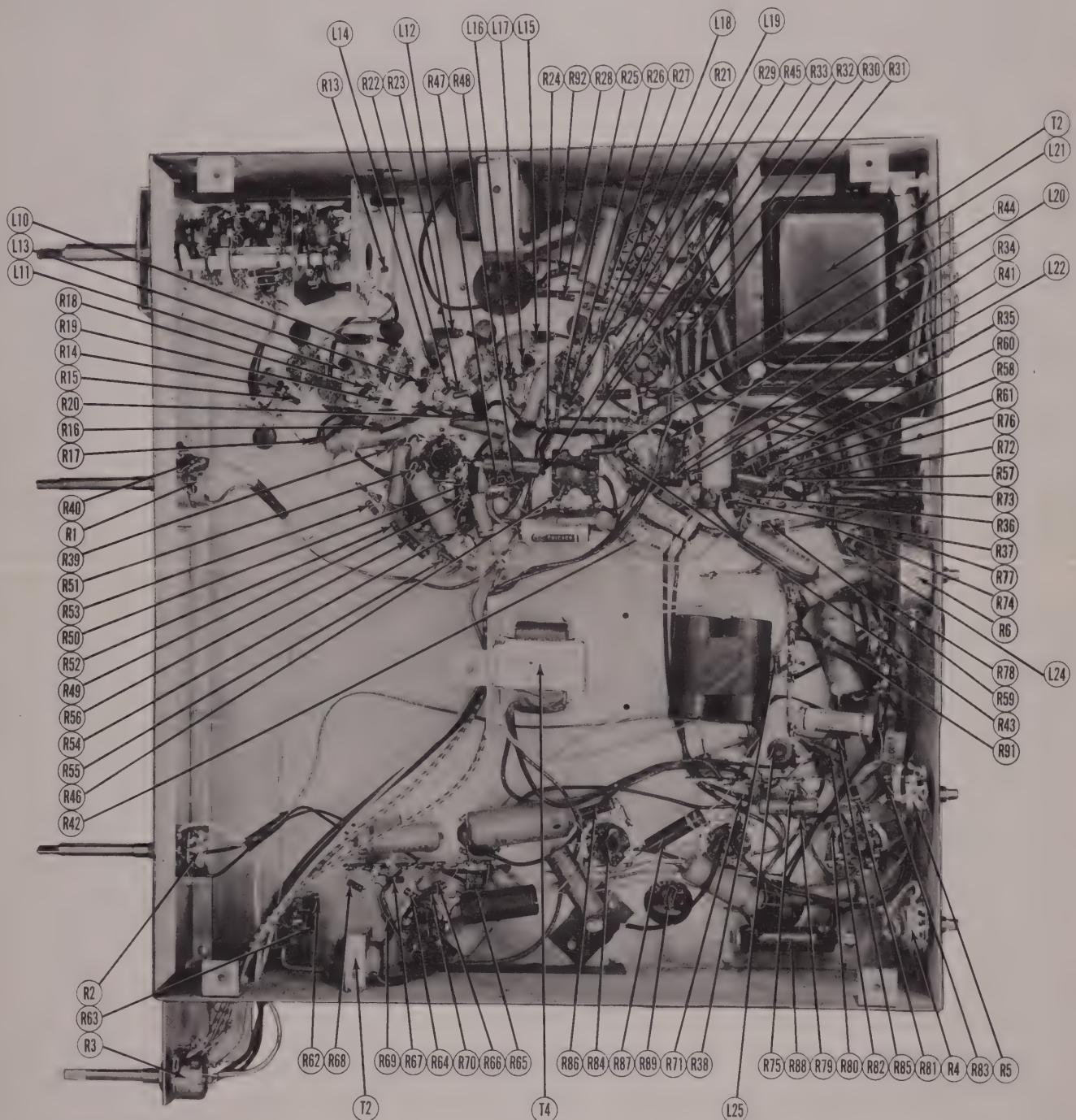
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



RADIO CHASSIS-TOP VIEW



RADIO CHASSIS-BOTTOM VIEW



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

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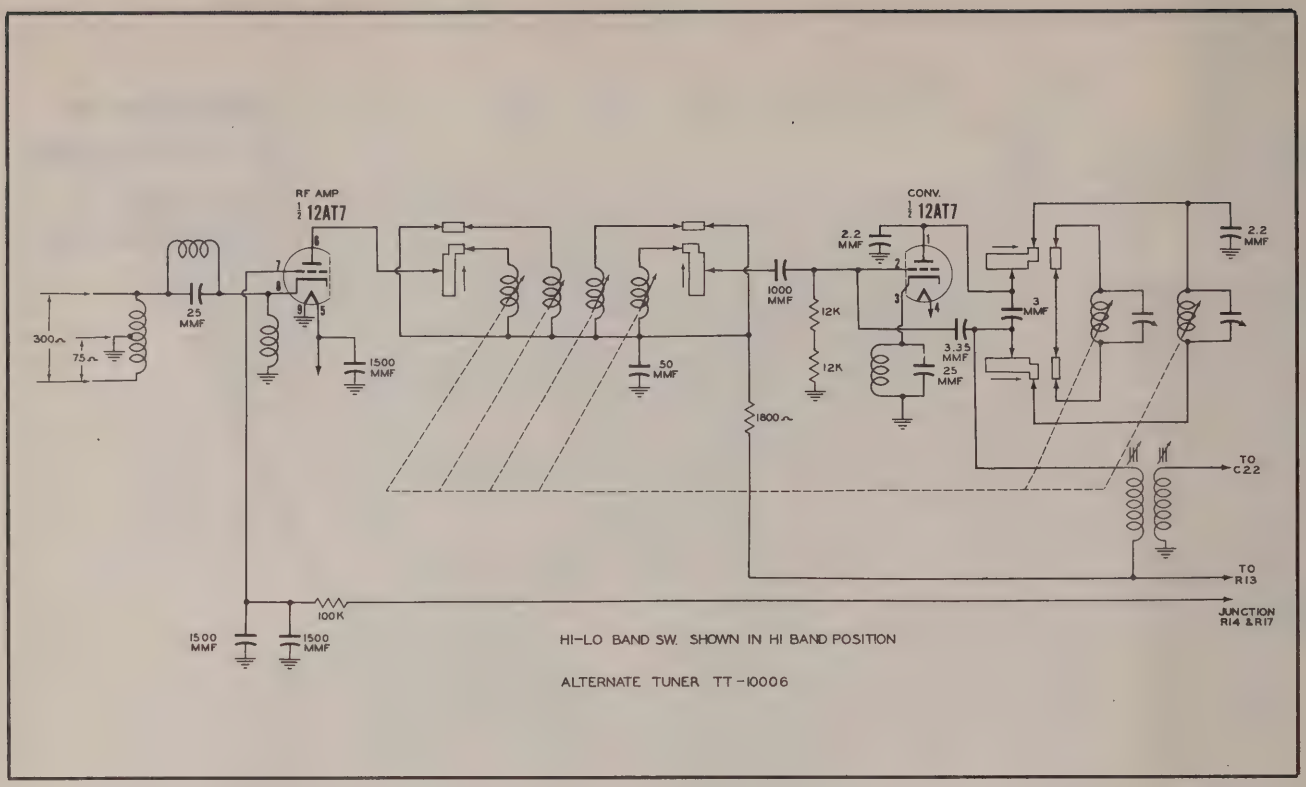


DISASSEMBLY INSTRUCTIONS

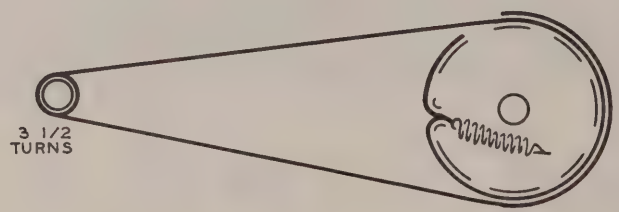
CHASSIS REMOVAL

1. Remove ten push-on type control knobs.
2. Remove ten 1/4" hex head wood screws holding rear cover. Remove rear cover.
3. Disconnect phonograph leads.
4. Disconnect built-in antenna.
5. Disconnect speaker, loop, and power leads from radio.
6. Remove two 5/16" hex nuts holding radio chassis. Remove radio chassis.
7. Remove five 3/8" hex head bolts holding TV chassis. Remove TV chassis.
8. Remove two 9/32" hex nuts from speaker. Remove speaker.

PICTURE TUBE REMOVAL

1. Remove chassis as outlined above.
2. Remove rubber covered guard at front of tube.
3. Remove guard at front of chassis. Remove tube.

TUNING GANG FULLY CLOSED



DIAL CORD STRINGING

RADIO PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

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ITEM No.	USE	REPLACEMENT DATA: Philharmonic PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V20	Converter	12BE6	12BE6	7CH	
V21	IF Amp.	12BA6	12BA6	7BK	
V22	Det. -AVC-AF Amp.	12AT6	12AT6	7BT	
V23	Power Output	50C5	50C5	7CV	
V24	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Philharmonic PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C87A	40		CL-100067A	AFH4-44		UP42215C		TVL-3437	▲ Filter
B	20								■ Filter
C	20								▲ Filter
C88	.05	200	CP-14503	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C89A	100			SI100	D6-101	5W5T1	GP1K-101	5GA-T1	Diode RF Filter †
B	100			SI100	D6-101	5W5T1	GP1K-101	5GA-T1	Diode RF Filter †
C90	.005	600	CP-12502	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Audio Coupling
C91	.005	600	CP-12502	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Audio Coupling
C92	.02	400	CP-12203	P488-02	DF-203	PTE4S2		4TM-S2	Output Plate Bypass
C93	.15	400	CP-14154	P488-15		GT4P2		4TM-P15	Line Isolation
C94	.05	400	CP-14503	489ZGXY		PJ4S5		4TM-S5	Line Filter

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Philharmonic PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R93	1Meg	½	VC-12128				Volume control and switch

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Philharmonic PART No.	IRC PART No.	IDENTIFICATION CODES
R94	22KΩ	½	RC-32202	BTS-22K	Osc. Grid
R95	68Ω	½	RC-30680	BW-½-68	IF Amp. Cathode
R96	2.2Meg	½	RC-32204	BTS-2.2Meg	AVC Network
R97	10KΩ	½	†	BTS-10K	Diode Filter
R98	10Meg	½	RC-31005	BTS-10Meg	AF Amp. Grid
R99	220KΩ	½	RC-32203	BTS-220K	AF Amp. Plate
R100	470KΩ	½	RC-34703	BTS-470K	Output Grid
R101	150Ω	½	RC-31500	BTS-150	Output Cathode
R102	470Ω	1	RC-44700	BTA-470	Filter
R103	220Ω	1	RC-42200	BTA-220	Filter

† Items R97, C89A and C89B are combined into one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: Philharmonic PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T8	2200Ω	3.8Ω	215Ω	.7Ω	TO-10032	A-3876	A-2928	RO-2	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: Philharmonic PART No.	REPLACEMENT DATA: MERIT PART No.	NOTES
L27	Loop Ant.	3Ω		ALP-10026		
L28	Osc. Coil	7.8Ω	6Ω	TRC-10013A		
L29	1st. IF	15Ω	16Ω	TS-10043		
L30	2nd. IF	15Ω	16Ω	TS-10043		

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA: Philharmonic PART No.	ASTATIC PART No.: CARTRIDGE	ASTATIC PART No.: NEEDLE	SHURE PART No.: CARTRIDGE	SHURE PART No.: NEEDLE	ELECTRO-VOICE PART No.: CARTRIDGE	ELECTRO-VOICE PART No.: NEEDLE	REMARKS
M5		AC-AG-J	A-AG	W26B	A66U	33	0-2 or S-2	

ASTATIC, SHURE, AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: Philharmonic PART No.	REPLACEMENT DATA	NOTES
M6	Bayonet	6-8	.15	Brown	DB-10000		Type #47

MISCELLANEOUS

ITEM No.	PART NAME	Philharmonic PART No.	NOTES
M7	Switch		Radio Phono
M8	Tuning Cap	CV-10025	24-455MMF, 31-222MMF

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA: PHILHARMONIC PART No.	WALCO PART No.	JENSEN PART No.	REMARKS
M9		W-30AGA	JP-312	

PHILHARMONIC MODELS 5000, 5200, 5201, 5250, 5400, 5401, 5450, 5600, 5601, 5650, 5700, 5700RT, 5701, 5750, 5750RT, 5800

TV PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Philharmonic PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C54	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Audio Coupling
C55	.005	600		P688-005	D6-502	PTE6D5	811-005	6TM-D5	Audio Coupling
C56	.02	600		P688-02	DF-303	PTE6S3		6TM-S3	Audio Coupling
C57	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Bias Filter
C58	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Output Plate Bypass
C59	22	500		1468-000025	D6-220	5W5Q25	GP1K-220	MS-425	Sync. Clipper Plate Bypass
C60	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Sync. Coupling
C61	2000			S12000	D6-202	TM5D2	GP2-333-202	5HK-D2	Integrator Net.
C62	5000			S15000	D6-502	TM5D5	811-005	5HK-D5	Integrator Net.
C63	5000			S15000	D6-502	TM5D5	811-005	5HK-D5	Integrator Net.
C64	4700			S14700	D6-472	TM5D5	GP2-333-472	5HK-D47	Vert. Osc. Grid
C65	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Vert. Discharge
C66	.25	600		684-25		PTE6P25		6TM-P25	Vert. Sweep Coupling
C67	1000			S11000	D6-102	TM5D1	GP2L-102	5HK-D1	Horiz. Sync. Coupling
C68	1000			S11000	D6-102	TM5D1	GP2L-102	5HK-D1	Horiz. Sync. Coupling
C69	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Feedback
C70	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Voltage Divider
C71	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	AFC Filter
C72	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	AFC Filter
C73	3900	500		1484-004		1DR5D4			Fixed Trimmer
C74	330	500		1468-00035					Horiz. Mult. Feedback
C75	430	500							Horiz. Discharge
C76	270	500		1468-00025	D6-271	5W5T25	GP2K-271	1FM-325	Horiz. Sweep Coupling
C77	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Output Screen
C78	.25	600		684-25		PTE6P25		6TM-P25	Horiz. Output Cathode
C79	.035	600		P688-033					Damper Filter
C80	.1	600		P688-1		PTE6P1		6TM-P1	Damper Filter
C81	10	1500		1469-HV-00001					
C82	.25	600		684-25		PTE6P25		6TM-P25	Horiz. Sweep Coupling
C83	.05	600		P688-05		PTE6S5		6TM-S5	Fixed Trimmer *
C84	500	3000		HV20B	TV2-502	MM-B20TS			HV Filter
C85	.01	600		689ZGXY		PJ6S1		6TM-S1	Line Filter
C86	.01	600		689ZGXY		PJ6S1		6TM-S1	Line Filter

* Not used in all Models

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Philharmonic PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	750Ω	½	VC-12118D		RTV-148	SBBT-560	Contrast control-tapped ② 500Ω-front
B	100KΩ	½					Brightness control - Rear
R2A	2Meg	½		Concentrikit® B11-139 *			Vert. hold control - front
B	50KΩ	½	VC-12117E	B11-123 *	RTV-149	SBB-559	Horiz. hold control - rear
C	Shaft End	½		E-202 *			Attach per instructions in "Concentrikit"
R3A	250KΩ	½	VC-12129	Q13-130	AG-84-Z	B-51-S	Volume control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R3A per instructions
C	Switch		Not Req.	76-2	SWB-2	Not Req.	Attach to R3A per instructions
R4A	2.5Meg	½	VC-12121	Q11-239	AM-84-S	AN-83	Height Control
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1	Attach to R4A per instructions
R5A	500KΩ	½	VC-12120	Q11-114	AM-19-S	AN-10	Vert. Linearity control
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1	Attach to R5A per instructions
R6	1500Ω	4	VC-12122		RTV-6	SVP-994	Focus control - Wire Wound

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PHILHARMONIC PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 20% UNLESS OTHERWISE STATED
R7	2200Ω 10%	½		BTS-2200	RF Amp. Grid
R8	2200Ω 10%	½		BTS-2200	RF Amp. Decoupling
R9	220KΩ	½			Conv. Grid Coil Shunt
R10	32KΩ	½			Osc. Grid
R11	4700Ω 10%	½		BTS-4700	Osc. Plate
R12	15KΩ	½			Conv. Plate
R13	100Ω	½		BTS-100	Decoupling
R14	8200Ω	½			1st. Video IF Amp. Grid
R15	82Ω	½		BTS-82	1st. Video IF Amp. Cathode
R16	100Ω	½		BTS-100	1st. Video IF Amp. Decoupling
R17	330Ω	½		BTS-330	AGC Network
R18	22KΩ	½			2nd. Video IF Amp. Grid
R19	82Ω	½		BTS-82	2nd. Video IF Amp. Cathode
R20	100Ω	½		BTS-100	2nd. Video IF Amp. Decoupling
R21	1Meg 10%	½			AGC Network
R22	8200Ω	½			3rd. Video IF Amp. Grid Coil Shunt
R23	82Ω	½		BTS-82	3rd. Video IF Amp. Cathode
R24	100Ω	½		BTS-100	3rd. Video IF Amp. Decoupling
R25	680KΩ	½		BTS-680K	AGC Diode Load
R26	39KΩ	1		BTA-39K	Voltage Divider
R27	8200Ω	½		BTS-8200	Video Det. Diode Load
R28	1000Ω	½		BTS-1000	Bias Network
R29	120Ω	½			Parasitic Suppressor
R30	22KΩ	1		BTA-22K	Voltage Divider
R31	22KΩ	3			Video Amp. Screen - See Note 1
R32	27KΩ	4			Video Amp. Plate - See Note 2
R33	5600Ω	1		BTA-5600	Voltage Divider
R34	2200Ω	½		BTS-2200	Picture Tube Grid
R35	270KΩ	½		BTS-270K	DC Rest. Load
R36	47KΩ	½		BTS-47K	DC Rest. Load
R37	820KΩ	½		BTS-820K	Voltage Divider
R38	1000Ω	½		BTS-1000	Acc . Anode Decoupling
R39	220KΩ 10%	½		BTS-220K	Voltage Divider
R40	10KΩ	½		BTS-10K	Voltage Divider

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Philharmonic PART No.	IRC PART No.	IDENTIFICATION CODES
R41	47KΩ	½			Sound IF Amp. Grid
R42	1000Ω	½		BTS-1000	Sound IF Amp. Cathode
R43	12KΩ	½			Voltage Divider
R44	39KΩ	1			Sound IF Amp. Screen
R45	1000Ω	½		BTS-1000	Sound IF Amp. Decoupling
R46	15KΩ	½		BTS -15K	De-emphasis
R47	6800Ω	½		BTS-6800	Ratio Det. -Diode Load
R48	6800Ω	½		BTS-6800	Ratio Det. -Diode Load
R49	470KΩ	½		BTS-470K	AF Amp. Grid
R50	330KΩ	½		BTS-330K	AF Amp. Plate
R51	100KΩ	½		BTS-100K	Audio Output Grid
R52	330KΩ 5%	½		BTS-330K 5%	Voltage Divider
R53	180KΩ 5%	½		BTS-180K 5%	Voltage Divider
R54	4700Ω	½		BTS-4700	Voltage Divider
R55	470KΩ	½		BTS-470K	Voltage Divider
R56	390Ω	1		BTA-390	Filter
R57	1Meg 10%	½		BTS-1Meg	Sync. Amp. Grid
R58	22KΩ	½		BTS-22K	Sync. Amp. Cathode
R59	3900Ω	½		BTS-3900	Sync. Amp. Plate
R60	3900Ω	½		BTS-3900	Sync. Amp. Plate
R61	22KΩ	½		BTS-22K	Integrator
R62	8200Ω	½		BTS-8200	Integrator
R63	8200Ω	½		BTS-8200	Integrator
R64	680KΩ	½		BTS-680K	Vert. Osc. Grid
R65	1Meg 10%	½		BTS-1Meg	Vert. Osc. Plate
R66	6.8Meg	½		BTS-6.8Meg	Voltage Divider
R67	100KΩ	½		BTS-100K	Voltage Divider
R68	3300Ω	½		BTS-3300	Vert. Peaking
R69	2.2Meg	½		BTS-2.2Meg	Vert. Amp. Grid
R70	560Ω	½		BTS-560	Vert. Amp. Cathode
R71	2700Ω	½		BTS-2700	Vert. Amp. Plate Decoupling
R72	100KΩ 5%	½		BTS-100K 5%	Horiz. Phase Det. Load
R73	100KΩ	½		BTS-100K	Horiz. Phase Det. Load
R74	4.7Meg	½		BTS-4.7Meg	Horiz. Phase Det. Load
R75	470KΩ	½		BTS-470K	Horiz. AFC Filter Network
R76	27KΩ	½		BTS-27K	Feedback Network
R77	4700Ω	½		BTS-4700	Feedback Network
R78	5600Ω	½		BTS-5600	Horiz. Mult. Plate
R79	100KΩ	½		BTS-100K	Horiz. Mult. Grid
R80	1500Ω	½		BTS-1500	Horiz. Mult. Cathode
R81	220KΩ	½		BTS-220K	Horiz. Mult. Plate Decoupling See note 3.
R82	22KΩ	1		BTA-22K	Filter
R83	1Meg 10%	½		BTS-1Meg	Horiz. Output Grid
R84	68Ω	½			Parasitic Suppressor
R85	56KΩ	½		BTS-56K	Filter
R86	82Ω	1		BW-1-82	Horiz. Output Cathode
R87	6800Ω	2		BTB-6800	Horiz. Output Screen See note 4.
R88	7500Ω	20		2D-7500	Damper Filter- Wire Wound
R89	3.3Ω	½			HV Rectifier Filament
R90	1Meg	1			HV Filter
R91	270Ω	2		BW-2-270	Focus Coil Shunt
R92	15Ω	½		BW-½-15	Bias Network

Note 1. Some models use two 47KΩ, 2 watt resistors in parallel to obtain required resistance and wattage.
Note 2. Some models use two 56KΩ, 2 watt resistors in parallel to obtain required resistance and wattage.
Note 3. Some models use a 270KΩ resistor in this application.
Note 4. Some models use a 8200Ω , 2 watt resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA PHILHARMONIC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ①1.8A	720VCT .200ADC	5VAC ③3A	6.3VAC ②2.7A SEC.4 6.3VAC ④6A	TP-10003B	PM8412 P-5014 ④	P-3070	TP-400 F-633 ④

④ Use for SEC. #3

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA Philharmonic PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	200Ω	1000Ω	TOA-10030A	A-8111 ①	A-3000 ①	TBO-1 ①	Vert. Block Osc. Trans.
T3	295Ω	1Ω	TO-10028	A-8128	HVO-5	TFB-3	Horiz. Output Trans.
	Tap ⑤	Tap ④					
	102Ω	.5Ω					
		Sec.2					
		0Ω					
T4	860Ω	13Ω	TO-10045	A-8112	A-3036	TSO-5 ①	Vert. Output Trans.
T5A	14Ω		TO-10026A	DY-7 ②	MDF-78 ②		Horiz. Deflection Coil
B	64Ω			DY-1 ③	MD-3 ③		Vert. Deflection Coil
T6	255Ω		TO-10025A				Focus Coil

① Drill one new mounting hole
② Used in models employing 16" picture tube.
③ Used in models employing 10" and 12" picture tube.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA Philharmonic PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	3800Ω	3.8Ω	430Ω	.7Ω	TO-10031	A-3877	A-3930	RO-6 ①	① Drill one new mounting hole.

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS V. C. IMP.	REPLACEMENT DATA PHILHARMONIC PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	PM	3.8Ω	SR-10024	10J12	10A4A	
	CONE DIA.	V. C. DIA.				
SP2	10"	1"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA Philharmonic PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.200ADC	32Ω	1.5Henries	LG-10021	C-2325 ①	C-2974	TR-4200①	① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA PHILHARMONIC PART No.	MERIT PART No.	IRC PART No.	NOTES
L2	Ant. Coil	.1Ω	.1Ω				
L3	Ant. Coil	.2Ω	.1Ω				
L4	RF Coil	0Ω					
L5	RF Coil	0Ω					
L6	Osc. Coil	0Ω					
L7	Osc. Coil	0Ω					
L8	Fil. Choke	.2Ω				CLA-.47	
L9	1st. Video IF	.5Ω					
L10	Fil. Choke	0Ω					
L11	2nd. Video IF	.1Ω					
L12	Fil. Choke	0Ω					
L13	RF Choke	4.1Ω					
L14	3rd. Video IF	.1Ω					
L15	Fil. Choke	0Ω					
L16	RF Choke	4.1Ω					
L17	4th Video IF	.1Ω					
L18	Peaking	8Ω					120 Microhenries, Yellow dot
L19	Peaking	20Ω					600 Microhenries, blue dot
L20	Peaking	9.5Ω					150 Microhenries, wound on 18KΩ Resistor
L21	Peaking	13Ω					300 Microhenries
L22	Sound IF	1.7Ω	1.7Ω				
L23	Ratio Det. Trans.	5Ω	.2Ω				
L24	Horiz. Osc.	67Ω					
L25	Horiz. Lin.	30Ω					
L26	Horiz. Size	.3Ω					

MISCELLANEOUS

ITEM No.	PART NAME	PHILHARMONIC PART No.	NOTES
M1.	RF Tuner	TT-10003	
M4	Ion Trap		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA PHILHARMONIC PART No. FUSE	PHILHARMONIC PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	REMARKS
M2	3AG	5A.250V			312005	341001	
M3	3AG Pigtail	1/4A. 250V			318.250		

PHILHARMONIC MODELS 5000, 5200, 5201, 5250, 5400, 5401, 5450, 5600, 5601, 5650, 5700, 5700RT, 5701, 5750, 5750RT, 5800

TV PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		PHILHARMONIC PART No.	STANDARD REPLACEMENT		
V1A	RF Amp.	6CB6	6CB6	6CK	
B	RF Amp.	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF	6AU6	6AU6	7BK	
V4	2nd Video IF	6AU6	6AU6	7BK	
V5	3rd Video IF	6AU6	6AU6	7BK	
V6	Video Det. -AGC	6AL5	6AL5	6BT	
V7	Video Amp.	6AC7	6AC7	8N	
V8	DC Rest. Sync. Clipper Sync. Amp. -Sync. Phase Inv.	12AU7	12AU7	9A	
V9	Sound IF Amp.	6AU6	6AU6	7BK	
V10	Ratio Det. -AF Amp.	6T8	6T8	9F	
V11	Audio Output	6V6GT	6V6GT	7AC	
V12	Vert. Osc. -Amp.	6SN7GT	6SN7GT	8BD	
V13	Hor. Phase Det.	6AL5	6AL5	6BT	
V14	Hor. Mult.	6SN7GT	6SN7GT	8BD	
V15	Hor. Output	6BG6G	6BG6G	5BT	
V16	Damper	6W4GT	6W4GT	4CG	
V17	HV Rect.	1B3GT	1B3GT	3C	
V18	LV Rect.	5U4G	5U4G	5T	

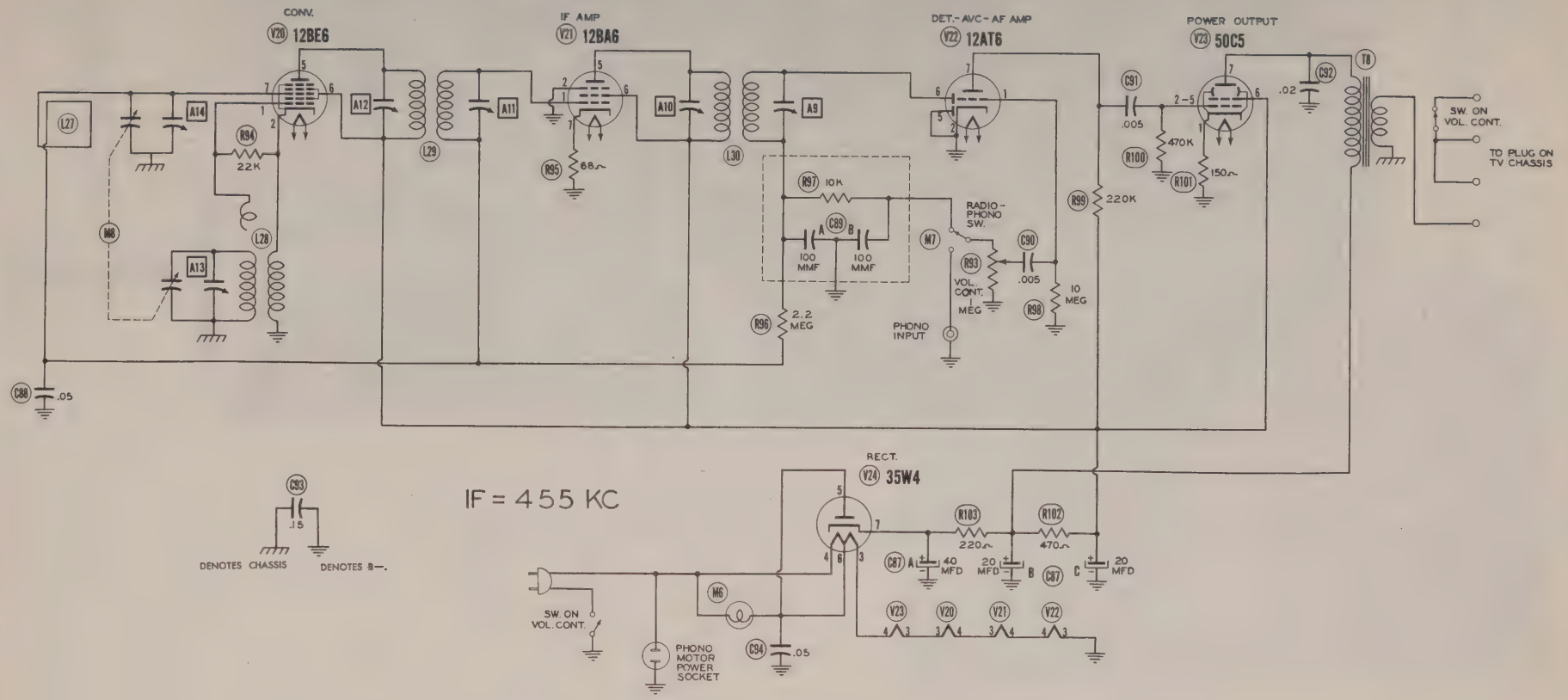
CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA			RTMA BASE TYPE	NOTES
	PHILHARMONIC PART No.	SYLVANIA PART No.	THOMAS PART No.		
V19A	16JP4	16JP4A	16JP4A	12D	* Use single magnet Ion Trap.
B	12LP4	12LP4A	12LP4A *	12D	
C	10BP4	10BP4	10BP4A	12D	
D	16LP4	16LP4A	16CP4A *	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	Philharmonic PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	450		AFH3-44		UPT44445		TVL-3787	▲ Filter
B	40	45							■ Filter
C	40	450							● Filter
C2	500	5		PRS6/500		BRH605A		TVA-1103	Filter
C3A	10	450		AFH4-10		UPT1111145		TVL-4760	● Vert. Osc. Dec.
B	20	450							■ Vert. Output Dec.
C	10	450							▲ Decoupling
C4	40	350		PRS450/40		BR4045A		TVA-1611	Output Dec.
C5	40	350		PRS450/40		BR4045A		TVA-1611	Decoupling
C6	4	50		PRS150/4		BR550		TVA-1303	Stabilizing Cap.
C7	10	250		PRS250/12		BR1025		TVA-1504	Video Amp. Screen
C8	100	25				BRH251A		TVA-1207	Vert. Output Cathode
C9	15				D6-150		GP1K-150	5GA-Q15	RF Coupling
C10	1000				DD-102	TM5D1	801-001	5HK-D1	AGC Filter
C11	1000				DD-102	TM5D1	801-001	5HK-D1	RF Decoupling
C12	470				D6-471		GP2K-471	5GA-T47	RF Decoupling
C13	.25								RF Coupling
C14	5				TCZ-.5				RF Coupling
C15	1.8								RF Coupling
C16	470			SI470	D6-471		GP2K-471	5GA-T47	Mixer Grid Filter
C17	1.5			SI1.5NP0	TCZ-1.5		NP0K-1R5		Osc. Coupling
C18	10			SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Osc. Grid Cap.
C19	3			SI3NP0	TCZ-3.3		N080-331-030		Osc. Feedback
C20	1000			BPD-001	DD-102	TM5D1	801-001	5HK-D1	Conv. Fil. Bypass
C21	10			SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C22	100	500		1468-0001	DC-101	5W5T1	GP1K-101	1FM-31	IF Coupling
C23	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	Fil. Bypass
C24	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	AGC Filter
C25	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	1st. Video IF Dec.
C26	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	1st. Video IF Fil.
C27	100	500		1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	IF Coupling
C28	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	AGC Filter
C29	5000			BPD-005	DD-502	TM5D1	811-005	5HK-D5	2nd. Video IF Dec.
C30	5000			BPD-005	DD-502	TM5D1	811-005	5HK-D5	2nd. Video IF Fil.
C31	100	500		1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	IF Coupling
C32	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	3rd. Video IF Dec.
C33	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	3rd. Video IF Cathode
C34	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	3rd. Video IF Fil.
C35	100	500		1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	IF Coupling
C36	120			SI120	D6-121	TM5T12	GP2K-121	5GA-T12	IF Coupling
C37	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1,	DAGC Decoupling
C38	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Bias Filter
C39	5			SI5	TCZ-4.7	5W5V5		MS-55	Video Diode Filter
C40	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	Video Det. AGC Filter
C41	680			SI680	D6-681	1W5T7	GP2K-680	5GA-T68	Video Amp. Cath.
C42	470			SI470	D6-471	5W5T5	GP2K-471	5GA-T47	Video Amp. Cath.
C43	39	500		1469-00004	TCZ-39	5R5T4	NP0L-390	MS-44	Fixed Trimmer
C44	39	500		1469-00004	TCZ-39	5R5T4	NP0L-390	MS-44	Fixed Trimmer
C45	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Video Coupling
C46	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Picture Tube Cath.
C47	47	500		1468-00005	D6-470	5W5Q5	GP1K-470	1FM-45	Sound IF Grid Filter
C48	.02	600		P688-02	DF-203	P688-02		6TM-S2	Sound IF Cathode
C49	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	Sound IF Screen
C50	.02	600		P688-02	DF-203	PTE6S2		6TM-S2	Sound IF Dec.
C51	3			SI3NP0	TCZ-3.3		NP0K-030		Balancing
C52	1000			SI1000	D6-102	TM5D1	GP2L-102	5HK-D1	Diode Load Cap.
C53	3900			SI4000	D6-402	PTE6D4	GP2-333-392	6TM-D4	De-emphasis



VOLTAGE READINGS — RADIO-PHONO SWITCH IN "RADIO" POSITION.

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V20	12BE6	8-9.2VDC	0V.	35VAC	24VAC	95VDC	95VDC	-.1VDC
V21	12BA6	.1VDC	0V.	24VAC	12VAC	95VDC	95VDC	.9VDC
V22	12AT6	-.8VDC	0V.	0V.	12VAC	0V.	-.3VDC	50VDC
V23	50C5	5.7VDC	0V.	35VAC	85VAC	0V.	95VDC	100VDC
V24	35W4	0V.	117VAC	85VAC	117VAC	110VAC	110VAC	120VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V20	12BE6	22KΩ	7.8Ω	37Ω	25Ω	†705Ω	†690Ω	3.2 Meg.
V21	12BA6	3.2 Meg.	0Ω	25Ω	13Ω	†705Ω	†690Ω	68Ω
V22	12AT6	10 Meg.	0Ω	0Ω	13Ω	0Ω	1 Meg.	†220KΩ
V23	50C5	150Ω	470KΩ	37Ω	90Ω	470KΩ	†690Ω	†435Ω
V24	35W4	0Ω	115Ω	90Ω	115Ω	112Ω	112Ω	65KΩ

† MEASURED FROM PIN 7 OF V24.

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RADIO SCHEMATIC

PHILHARMONIC MODELS 5000, 5200, 5201, 5250, 5400, 5401, 5450, 5600, 5601, 5650, 5700, 5700RT, 5701, 5750, 5750RT, 5800

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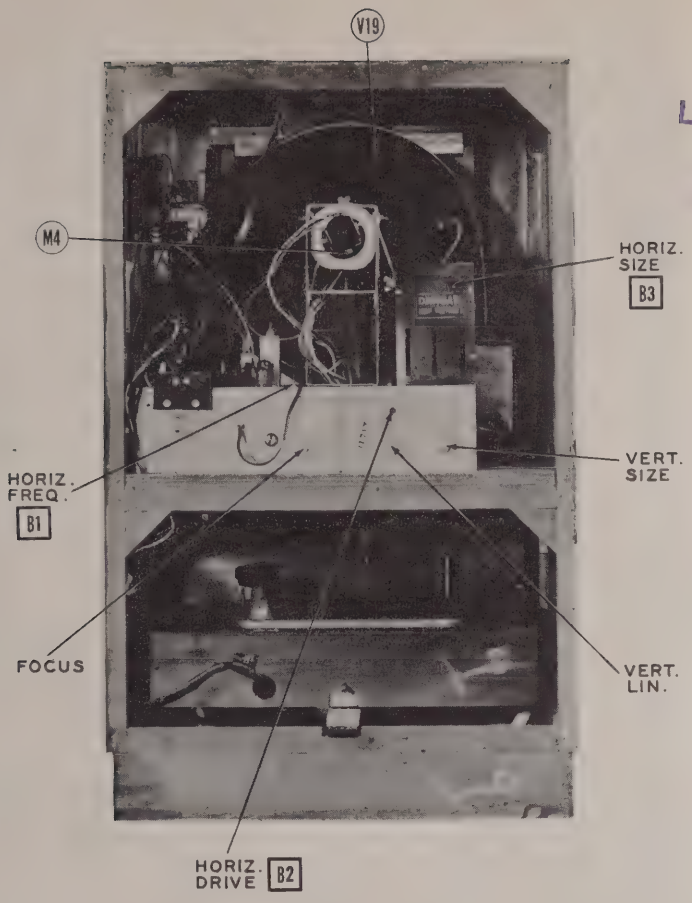

CABINET–REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station preferably a test pattern.

Turn the horizontal hold to the mid-position of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Turn the horizontal drive trimmer (B2) clockwise as far as possible without crowding the right side of the picture.

Adjust the horizontal size slug (B3) until the picture fills the mask horizontally.

Adjust the horizontal linearity slug (B4) for best linearity from left to right.

A slight readjustment of B2 may be necessary to obtain optimum results.

PHOTOFACT* Folder

*TRADE MARK

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RCA
MODEL 16T152 (Ch. KCS47E)

TRADE NAME	RCA Victor Model 16T152 (Ch. KCS47E)
MANUFACTURER	RCA Victor Div., Radio Corp., of America, Camden, N.J.
TYPE SET	Television Receiver
TUBES	Twenty Two
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING 1.5 Amp. @ 117 Volts AC
TUNING RANGE—	Channels 2 thru 13

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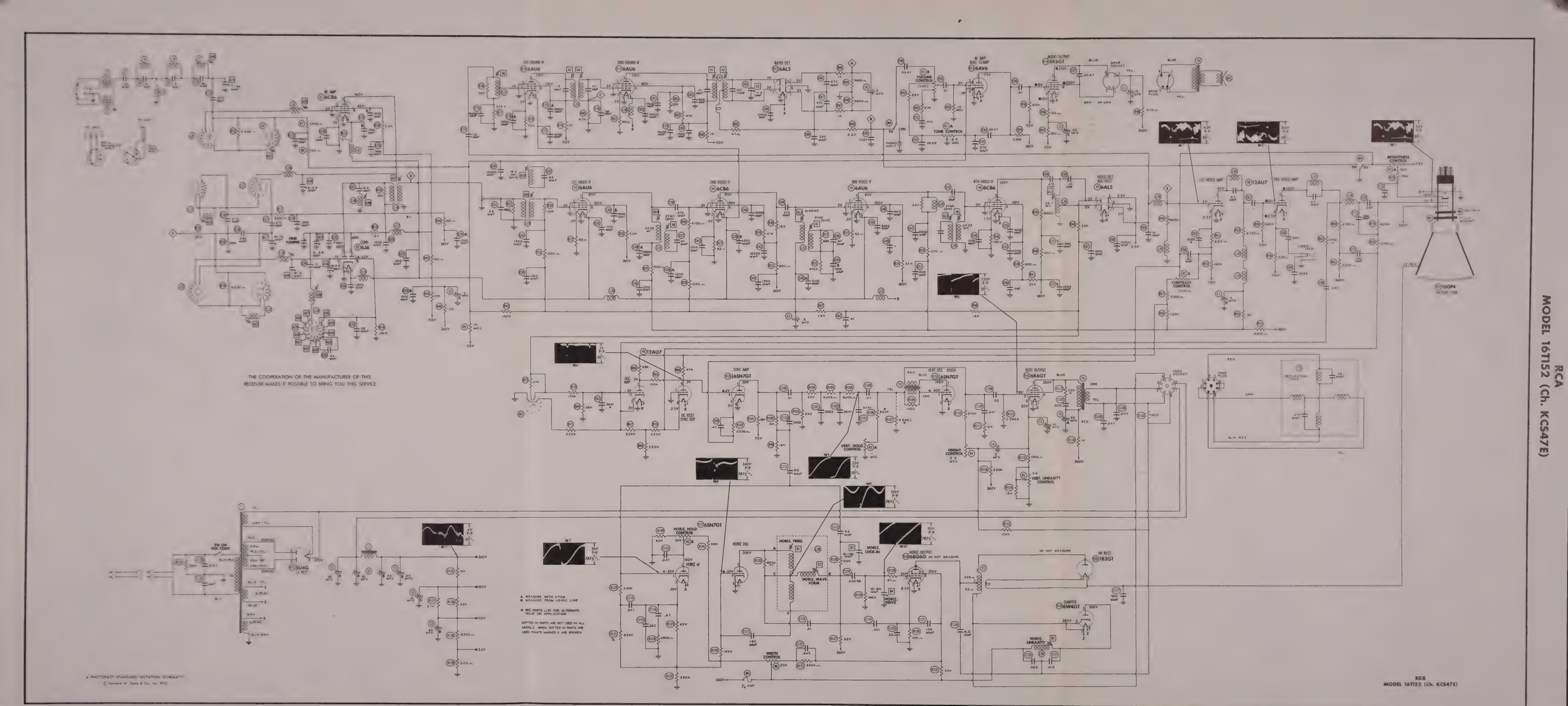
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MODEL 16T152 (Ch. KCS47E)
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A MEASURE WITH VTVM
B MEASURE FROM 105VDC LINE
C SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN
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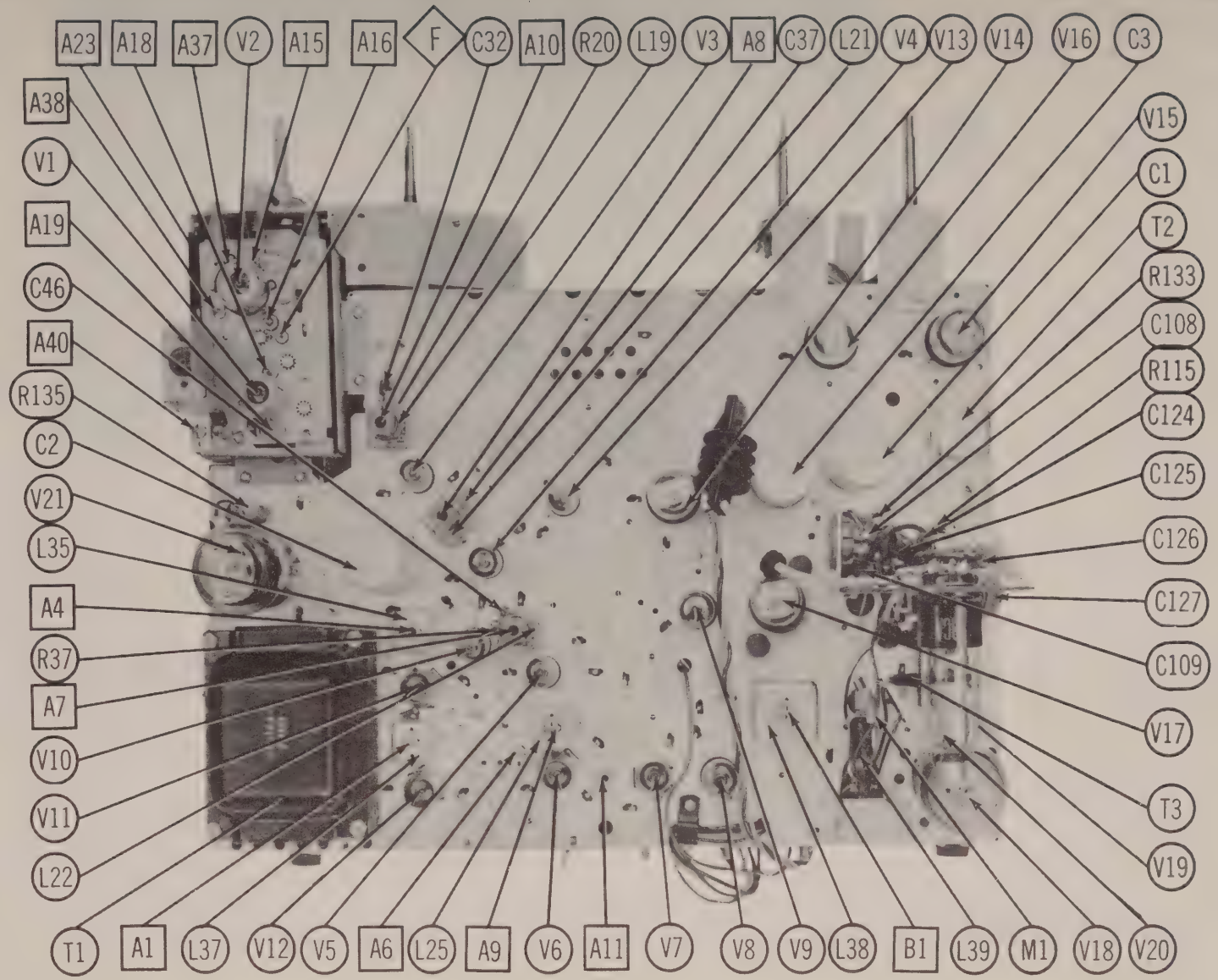
MODEL 16T152 (Ch. KCS47E)



CHASSIS TOP VIEW

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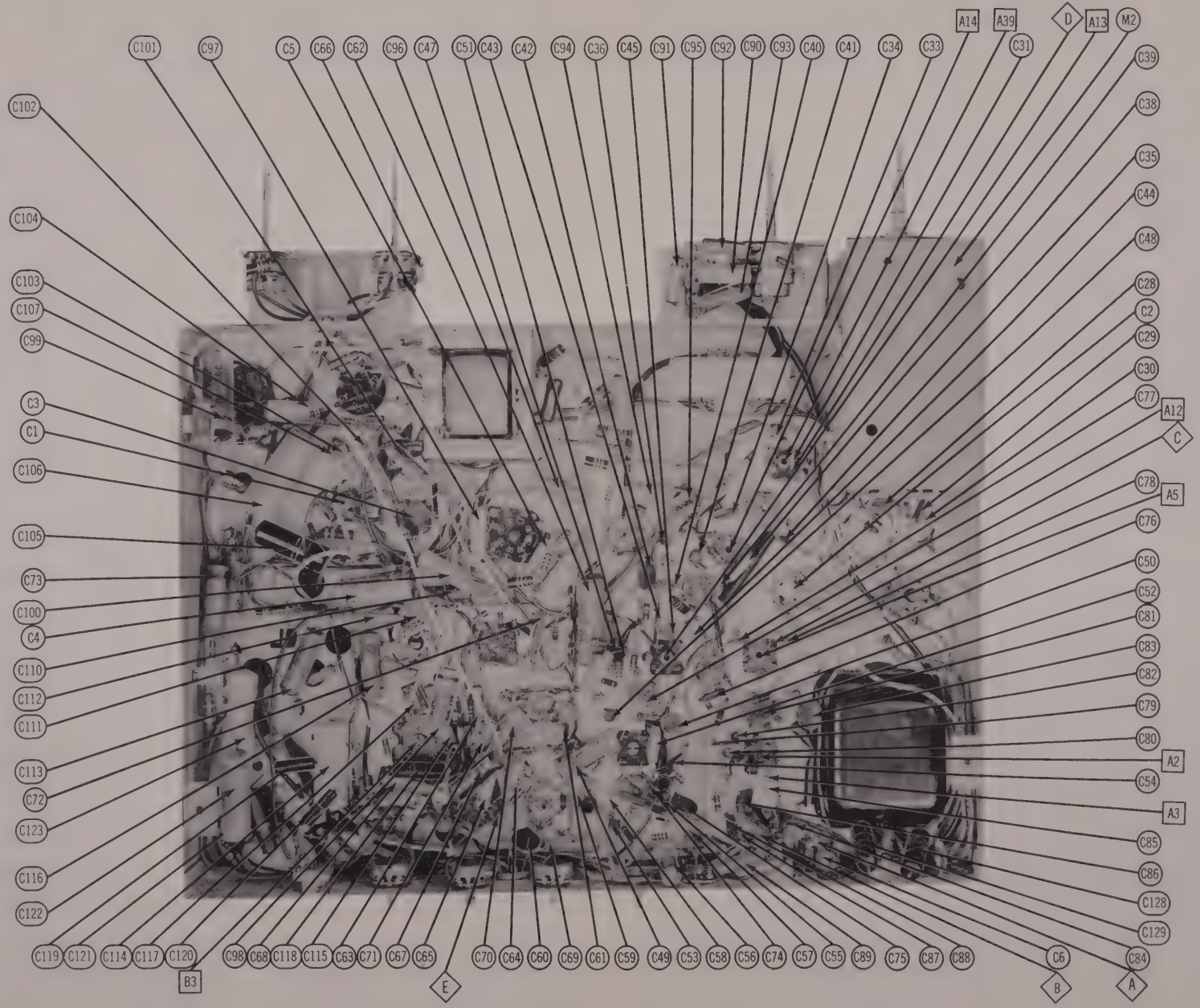

CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

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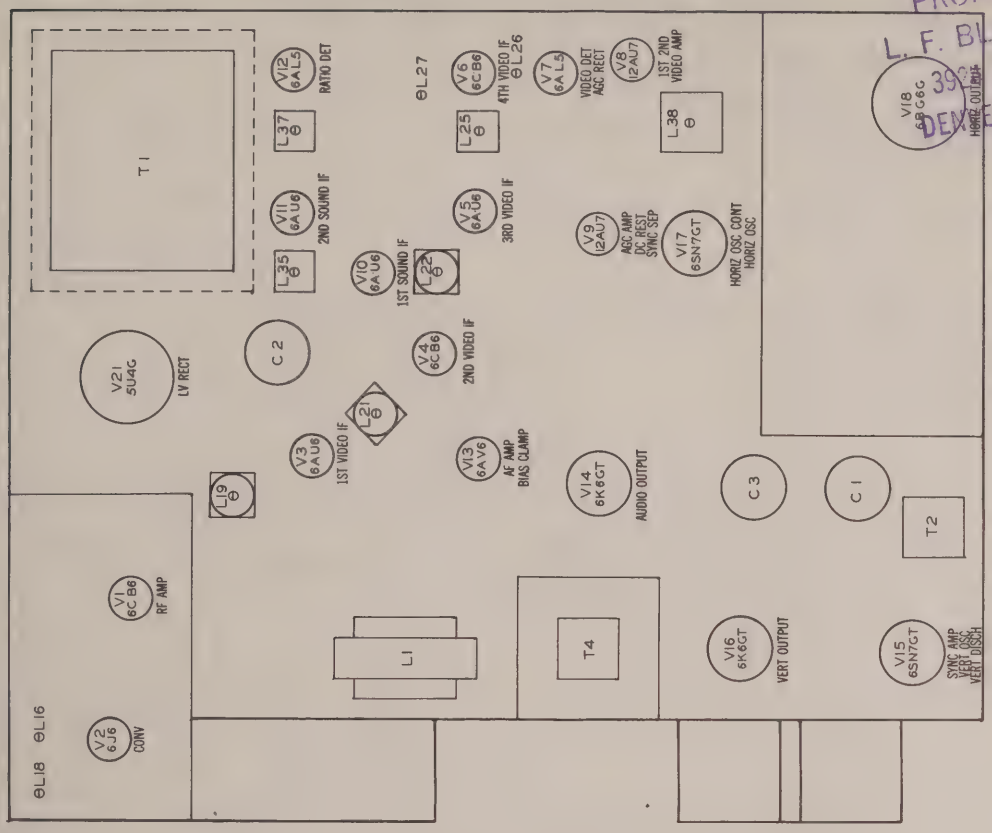

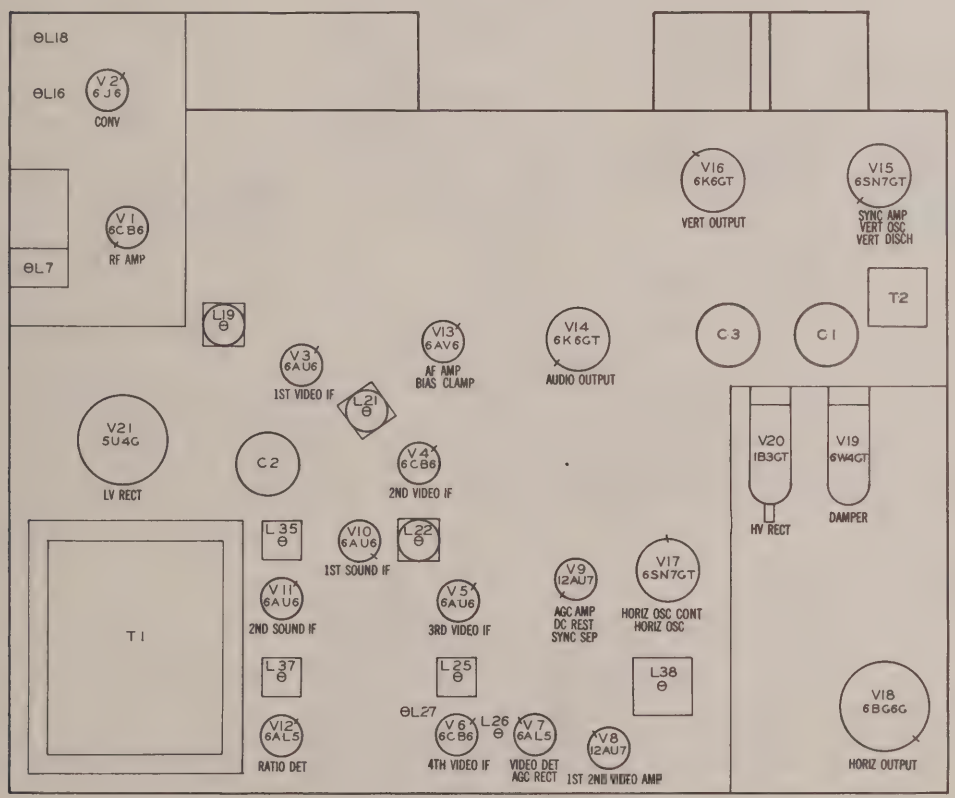

TOP VIEW

TUBE PLACEMENT CHART

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ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube, (V17), from its socket.

SOUND IF ALIGNMENT

Connect an oscilloscope across the speaker voice coil

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.005MFD	High side to pin 1, (grid) of 6AU6, (V11). Low side to chassis.	Not used	4.5MC (400%mod)	Any channel not used locally	Use VTVM DC probe to point (A). Common to chassis.	A1	Turn A3 to minimum capacity. Adjust A1 for max. deflection on VTVM.
2.	"	"	"	"	"	"	A2	Adjust for MINIMUM 400% indication on scope
3.	"	"	"	"	"	DC probe to point (B) Common to chassis.	A3	If VTVM reads more than ± 1.5 volts adjust A3 for zero volts on meter and readjust A2 for minimum 400% on scope. Repeat adjustment of A3 and A2 until minimum on scope occurs with less than ± 1.5 volts at point (B)
4.	"	High side to pin 1 (grid), of 6AU6, (V10). Low side to chassis.	4.5MC (1 MC Swp)	4.5MC	"	Vert. Amp. thru 10KΩ to point (C). Low side to chassis.	A4, A5	Adjust for maximum amplitude and symmetry as per fig. 1.
5.	1000Ω resistor	High side thru 1000Ω to pin 7, (plate), of 6AL5, (V7). Low side to chassis	Not used	"	"	Use VTVM DC probe thru detector, (fig. 2) to pin 2 of picture tube. Common to chassis.	A6	Short pin 1 of V6 to chassis. Adjust for MINIMUM deflection.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt battery to the ungrounded lead of C5, connect the positive lead to chassis.

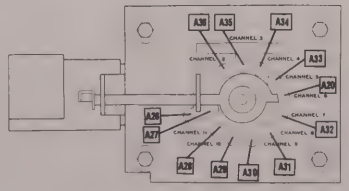
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	Direct	High side to Point (D). Low side to chassis.	21.MC (unmod.)	Set tuner to blank position between channels 2 & 13.	DC probe to Point (E). Common to chassis.	A7	Adjust for MINIMUM deflection.
7.	Direct	"	27MC	"	"	A8, A9	"
8.	"	"	19.5MC	"	"	A10	"
9.	"	"	23.7MC	"	"	A11	Adjust for maximum deflection
10.	"	"	25.35MC	"	"	A12	"
11.	"	"	21.95MC	"	"	A13	"
12.	"	"	22.5MC	"	"	A14	"

IF RF UNIT IS NOT TO BE ALIGNED CONTINUE WITH CONVERTER PLATE CIRCUIT ADJUSTMENT.

RF UNIT ALIGNMENT

Disconnect the co-ax link from terminal 2 of the tuner terminal strip.
In early productions where (A38) is adjustable back the core all the way out of the coil.
Back the core of L19 (A37), all the way out of the coil.
The tuner bottom cover must be in place during RF unit alignment.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	Not used	236.75MC	13	Vert. amp. thru detector, (Fig. 2) to Point (D). Low side to chassis.	A15	Adjust for zero beat indication on scope. This will be indicated by a narrow trace between two wide traces.
14.	"	"	183MC (10MC swp.)	181.25MC 185.75MC	8	Vert. Amp. to Point (F). Low side to chassis.	A16, A17 A18, A19	Adjust for response curve similar to Fig. 3.
15.	"	"	Not used	108.75MC	6	Vert. amp. thru detector to Point (D). Low side to chassis.	A20	Adjust for zero beat as in step 13.
16.	"	"	85MC (10MC swp.)	83.25MC 87.75MC	6	Vert. amp. to Point (F). Low side to chassis.	A21, A22 A23	Adjust for response curve similar to Fig. 3 If necessary retouch A17 for proper width.
17.	Connect VTVM to Point (F) common to chassis, and adjust A24 so VTVM reads - 3 volts.							
18.	Repeat steps 14, 15 and 16 until 3 volts is obtained at Point (F) without change of A21.							



OSCILLATOR ALIGN. POINTS

FIG. 1

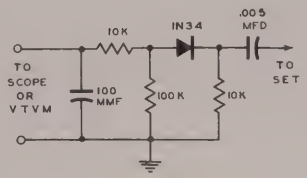


FIG. 2

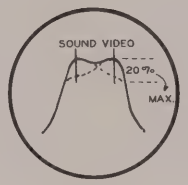


FIG. 3

FIG. 4

FIG. 5

ALIGNMENT INSTRUCTIONS (CONT.)

19.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	Not used	206.75MC	8	Vert. amp. thru detector to Point (D). Low side to chassis.	A15	Adjust for zero beat indication on scope. Stop 13.
20.	"	"	183MC (10MC swp.)	181.25MC 185.75MC	8	Vert. Amp. to Point (F). Low side to chassis.	A16, A18 A19	Adjust for response curve similar to Fig. 3. Readjust A17 only if necessary.
21.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"	A25	Adjust A25 for maximum amplitude between the markers. Then overshoot the adjustment by turning the slug a little farther in the same direction. Readjust A19 to regain maximum amplitude
22.	"	"	Not used	236.75MC	13	Vert. amp. thru detector to Point (D). Low side to chassis.	A26	Adjust for zero beat then overshoot the adjustment. Adjust A15 to reset the oscillator to proper frequency.
23.	"	"	201MC (10MC Swp)	199.25MC 203.75MC	11	Vert. Amp. to point (F) Low side to chassis.		Check the response on the high band channels. If the markers fall below 80% on any channel repeat step 20 and adjust A16, A17, A18 and A19 as needed to pull up the response on the channel that is off. Recheck channel 8 frequently to see that proper response is maintained on channel 8. If A19 is changed the adjustment should be overshot a small amount and corrected by adjusting A25.
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
24.	Repeat step 18. If the oscillator is off frequency overshoot the adjustment of A15 and reset oscillator to proper frequency by readjusting A25.							
25.	Repeat steps 23 and 24 until proper response is obtained, channel 8 oscillator frequency is correct and -3 volts is obtained at point (F)							
26.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	Not used	108.75MC	6	Vert. amp. thru detector to point (D) Low side to chassis.	A20	Adjust for zero beat indication on scope.
27.	"	"	85MC (10MC Swp)	83.25MC 87.75MC	6	Vert. Amp. to point (F) Low side to chassis.		Check the response curve shape. If necessary readjust A21, A22 and A23 for proper response. It should not be necessary to readjust A17.
28.	Connect VTVM to point (F) If necessary adjust A24 for -3 volt reading. If A24 is changed switch to channel 8 and readjust for proper response. Repeat step 27.							
29.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	79MC (10MC Swp)	77.25MC 81.75MC	5	Vert. amp. to Point (F) Low side to chassis.		Check for proper response curves and -3 volts at point (F). Recheck channels 7 thru 13.
			69MC (10MC swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			
30.	"	"	Not used	236.75MC	13	Vert. amp. thru detector to Point (D).	A15	Adjust for zero beat indication on scope.
				230.75MC	12		A27	
				224.75MC	11		A28	
				218.75MC	10		A29	
				212.75MC	9		A30	
				206.75MC	8		A31	
				200.75MC	7		A32	
				108.75MC	6		A20	
				102.75MC	5		A33	
				92.75MC	4		A34	
				86.75MC	3		A35	
				80.75MC	2		A36	
31.	"	"	183MC (10MC swp.)	181.25MC 185.75MC	8	Vert. amp. to Point (F). Low side to chassis.	A37	Adjust A37 clockwise. When properly adjusted response curve will be slightly wider with slightly deeper valley in top. If the valley in the top appears excessive on the high channels, adjust A38 to flatten the response. In later productions A38 is fixed and will not require adjustment.
32.	Switch thru all channels and check for: 1. Proper response curve, 2, oscillator injection voltage, (-3 volts to Point (F).) and oscillator frequency. Minor touch up adjustments may be made at this time. However, if A16 or A24 are changed appreciably, recheck the oscillator frequency on all channels.							

CONVERTER PLATE CIRCUIT ADJUSTMENT

Select a channel known to have a good RF response, (channel 6 is usually satisfactory)
Reduce the AGC bias to -1 Volt.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
33.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	Sweeping selected channel.	22.2MC 25.4MC	See instructions above.	Vert. Amp, to point (E) Low side to chassis.	A37, A39	Connect 300Ω carbon across R26, R30, L24 and R39. Adjust for response curve similar to fig. 4.
34.	"	"	"	21.85MC 24.75MC 25.5MC 26.25MC	"	"		Remove all 300Ω shunting resistors. Check for response curve similar to fig. 5. If necessary retouch A11 thru A14 for proper response.

FM TRAP ADJUSTMENT

If interference from an FM station is encountered, the FM trap, (A40) should be adjusted to minimize the interference. CAUTION: On some sets it is possible to tune the FM trap into channel 6. Do not tune the trap very low in frequency.

AGC ADJUSTMENT

The normal position for the AGC switch, in strong signal areas, is position 1, (counter-clockwise). If interference of the impulse type is encountered turn the switch to position 2 (center). In weak signal areas switch to position 3 (clockwise).

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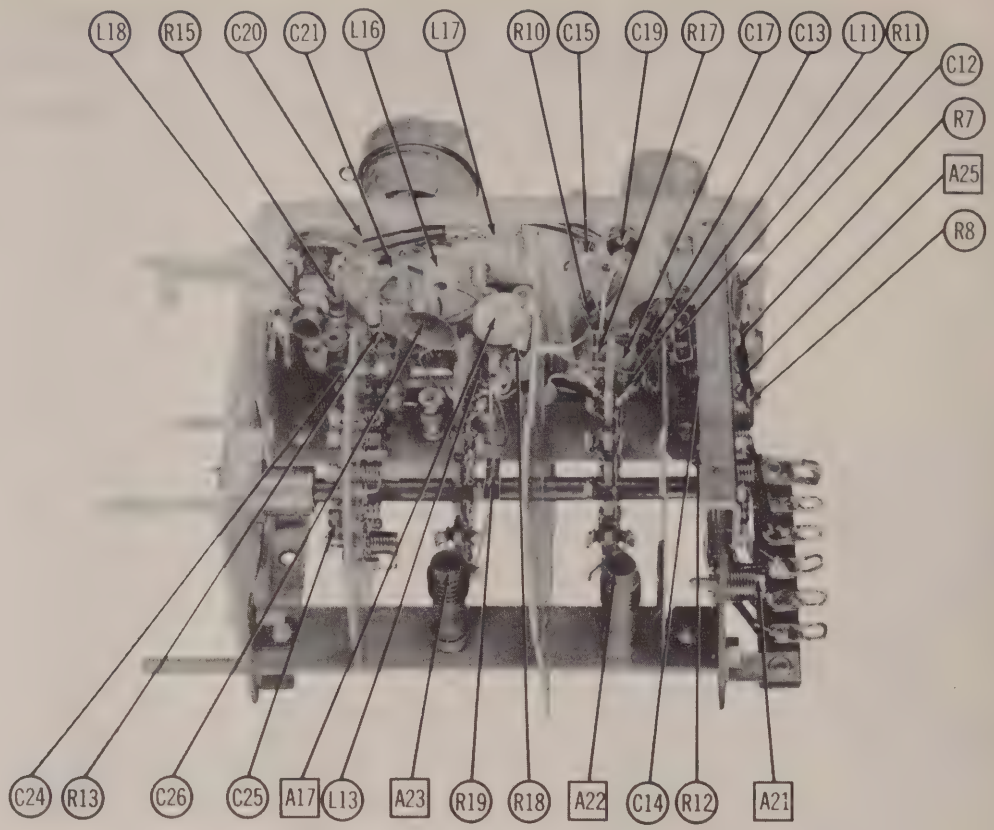
DENVER, COLORADO

RCA
MODEL 16T152 (Ch. KCS47E)

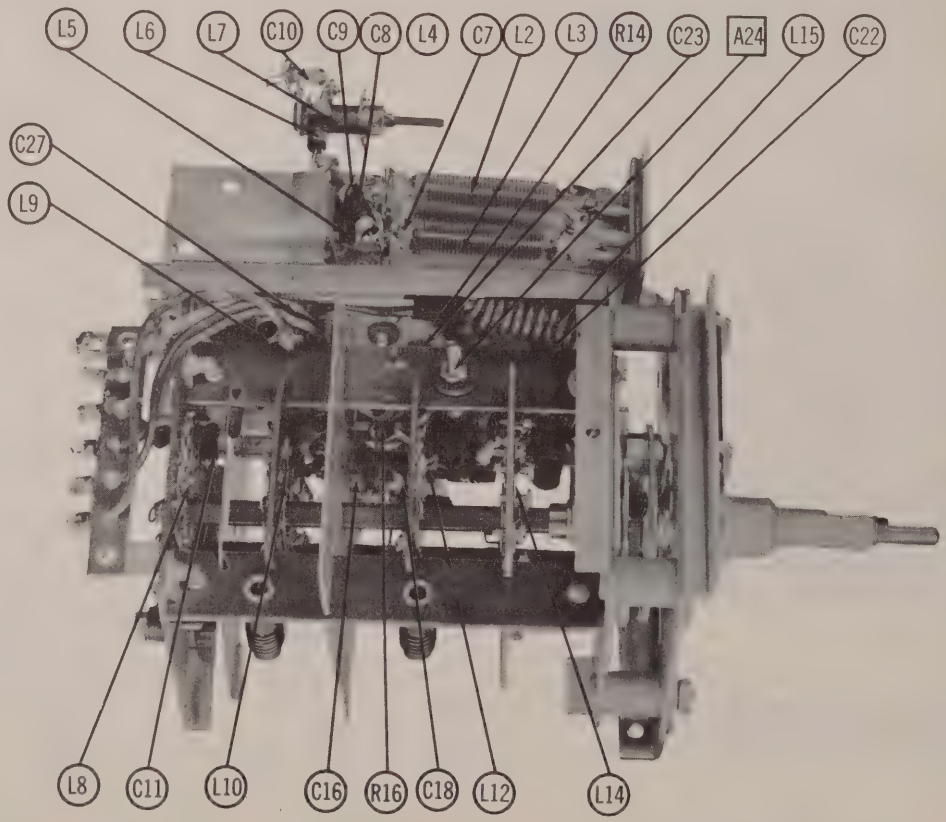
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1*	6CB6	335KΩ	27Ω	0Ω	.1Ω	†7.4KΩ	†30KΩ	0Ω		
V 2	6J6	†18KΩ	†18KΩ	0Ω	.1Ω	100KΩ	100KΩ	0Ω		
V 3	6AU6	190KΩ	0Ω	0Ω	.1Ω	†12KΩ	†37KΩ	82Ω		
V 4	6CB6	195KΩ	82Ω	.1Ω	0Ω	†17KΩ	†52KΩ	0Ω		
V 5	6AU6	190KΩ	0Ω	0Ω	.1Ω	†12KΩ	†37KΩ	82Ω		
V 6	6CB6	.2Ω	180Ω	.1Ω	0Ω	†12KΩ	†38KΩ	0Ω		
V 7	6AL5	.2Ω	239KΩ	0Ω	.1Ω	220Ω	0Ω	5.6KΩ		
V 8	1 2AU7	†26KΩ	5.6KΩ	1.3KΩ	.1Ω	.1Ω	†8.4KΩ	■560KΩ	■220Ω	0Ω
V 9	12AU7	45KΩ	56KΩ	440KΩ	.1Ω	.1Ω	40KΩ	0Ω	440KΩ	0Ω
V 10	6AU6	470KΩ	0Ω	0Ω	.1Ω	†1.4KΩ	†1.4KΩ	82Ω		
V 11	6AU6	47KΩ	0Ω	0Ω	.1Ω	†1.4KΩ	†11KΩ	68Ω		
V 12	6AL5	INF	INF	.1Ω	0Ω	7.8KΩ	0Ω	7.8KΩ		
V 13	6AV6	10Meg	0Ω	.1Ω	0Ω	330KΩ	330KΩ	†330KΩ		
V 14	6K6GT	■390Ω	.1Ω	†885Ω	†510Ω	■470KΩ	INF	0Ω	■490Ω	
V 15	6SN7GT	1.2Meg	#1.5Meg	0Ω	40KΩ	12KΩ	2.2KΩ	.1Ω	0Ω	
V 16	6K6GT	INF	0Ω	†1.4KΩ	†1.4KΩ	2.2Meg	350Ω	.1Ω	2KΩ	
V 17	6SN7GT	1.5Meg	†55KΩ	410KΩ	480KΩ	†82KΩ	0Ω	0Ω	.1Ω	
V 18	6BG6G	†45KΩ	.1Ω	100Ω	INF	1Meg	39KΩ	0Ω	†6KΩ	Top Cap #22Ω
V 19	6W4GT	INF	INF	300KΩ	INF	†80Ω	INF	#0Ω	#.2Ω	
V 20	1B3GT	PINS 1-8 HAVE INF RESISTANCE								Top Cap #250Ω
V 21	5U4G	INF	13KΩ	INF	48 Ω	INF	45Ω	INF	13KΩ	
V 22	16GP4	0Ω	1.2Meg	Pin 10 †45Ω	Pin 11 175KΩ	Pin 12 .1Ω				

ALL CONTROLS SET FOR NORMAL OPERATION- NO SIGNAL APPLIED
† MEASURED FROM PIN 8 OF V21
# MEASURED FROM PIN 3 OF V19
■ MEASURED FROM 115VDC LINE

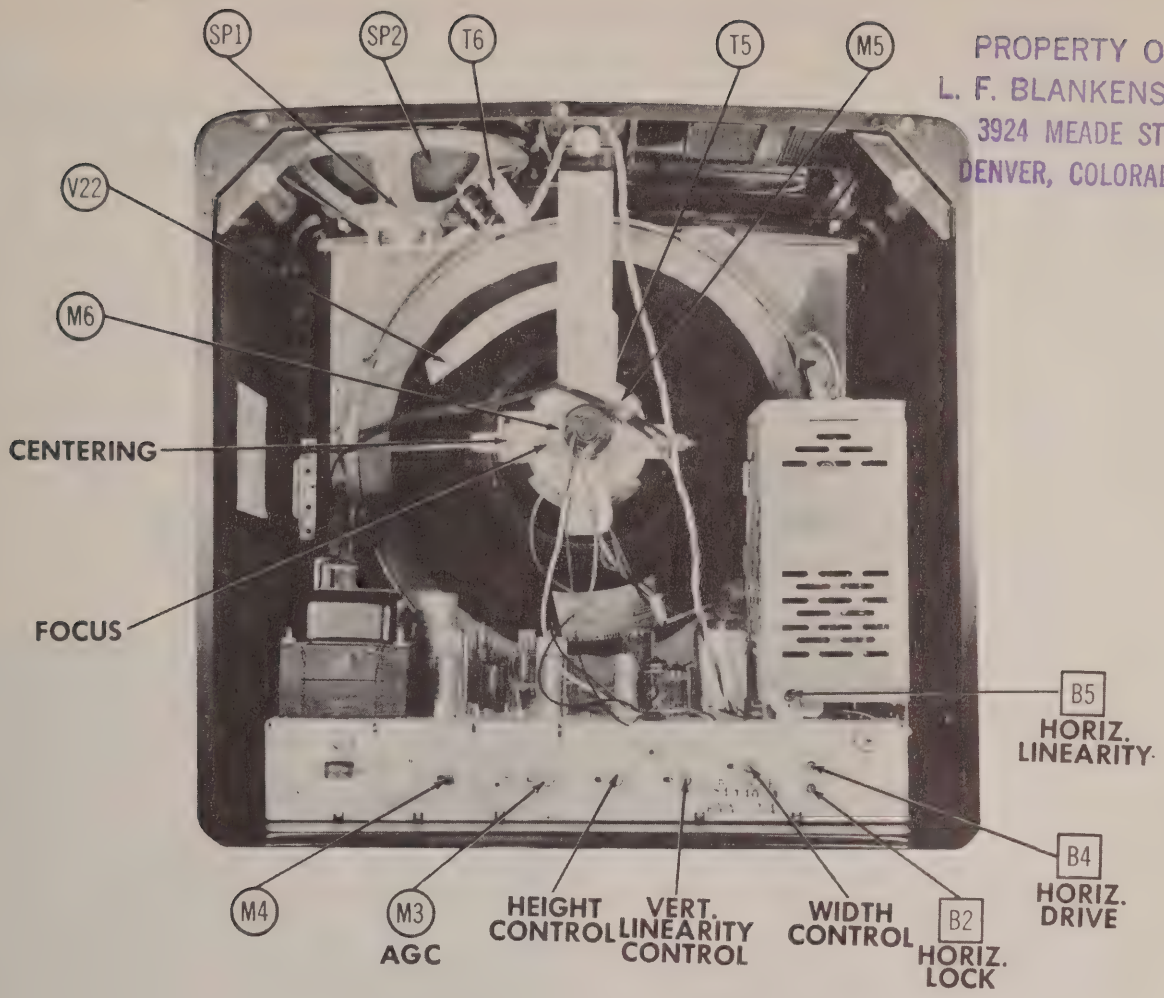


RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



CABINET-REAR VIEW

DISASSEMBLY INSTRUCTIONS

1. Remove 3 metal screws and back cover.
2. Remove 8 push-on type control knobs.
3. Disconnect speaker, HV lead, yoke plug and picture tube.
4. Remove 4 chassis bolts. Remove chassis.
5. Remove speaker mounting nuts and speaker.

Note: For picture tube removal it is necessary to remove chassis as outlined above.

PROPERTY OF
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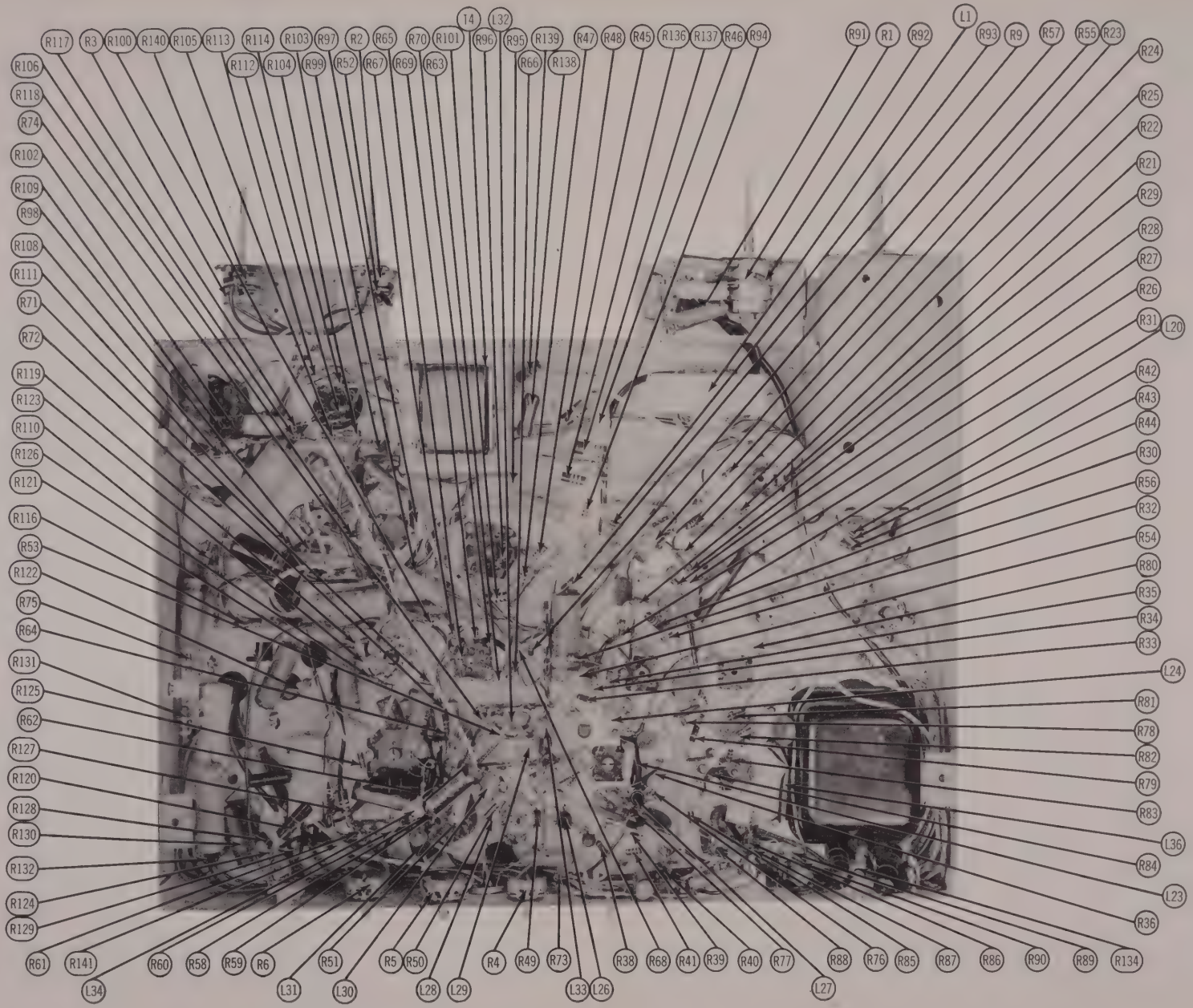
3924 MEADE ST.
DENVER, COLORADO



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		RCA PART No.	STANDARD REPLACEMENT		
V1	RF Amp.	6CB6	6CB6	7CM	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6AU6	6AU6	7BK	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6AU6	6AU6	7BK	
V6	4th. Video IF Amp.	6CB6	6CB6	7CM	
V7	Video Det.-AGC Rect.	6AL5	6AL5	6BT	
V8	1st. & 2nd. Video Amp.	12AU7	12AU7	9A	
V9	DC Rest.-Sync. Sep.	12AU7	12AU7	9A	
V10	1st. Sound IF Amp.	6AU6	6AU6	7BK	
V11	2nd. Sound IF Amp.	6AU6	6AU6	7BK	
V12	Ratio Det.	6AL5	6AL5	6BT	
V13	AF Amp. Bias Clamp	6AV6	6AV6	7BT	
V14	Audio Output	6K6GT	6K6GT	7S	
V15	Sync. Amp. Vert. Osc. & Discharge	6SN7GT	6SN7GT	8BD	
V16	Vert. Output	6K6GT	6K6GT	7S	
V17	Horiz. AFC-Horiz. Osc.	6SN6GT	6SN7GT	8BD	
V18	Horiz. Output	6BG6G	6BG6G	5BT	
V19	Damper	6W4GT	6W4GT	4CG	
V20	HV Rect.	1B3GT	1B3GT	3C	
V21	LV Rect.	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA			RTMA BASE TYPE	NOTES
	RCA PART No.	SYLVANIA PART No.	THOMAS PART No.		
V22	16GP4	16GP4		12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	RCA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	35	450	75510	AFH4-16		UPT420		TVL-3785	▪ Filter
B	35	450						TVA-1702	■ Filter
C	10	450							▲ Audio Output Dec.
D	5	450							Decoupling
C2A	35	450	75510	AFH4-16		UPT420		TVL-3785	▪ Filter
B	35	450						TVA-1702	■ Filter
C	10	450							▲ Decoupling
D	5	450							Decoupling
C3A	20	450	75511	AFH4-108		UPT421		TVL-4701	▪ Vert. Output Dec.
B	80	200							■ Decoupling
C	20	200							▲ Audio Output Cathode
D	50	50							Vert. Output Cathode
C4	5	450	28417	PRS450/4		BR445		TVA-1702	Vert. Osc. Dec.
C5	2	50	73747	PRS150/4		BBR2-50T		TVA-1301	AGC Filter
C6	5	50	74521	PRS150/4		BR550		TVA-1303	Stabilizing Cap.
C7	100			SI100	D6-101		GP1K-101	5GA-T1	RF Coupling
C8	18								Fixed Trimmer
C9	18								Fixed Trimmer
C10	39				TCZ-39		NP0K-390		Fixed Trimmer
C11	270		75199	SI270	D6-271		GP2K-271	5GA-T27	RF Coupling
C12	5000		73473	BPD-005	DD-502		811-005	5HK-D5	RF Bypass
C13A	1500		75089	BPD-2X0015	DD-2-152		812-0015	5HK-2D15	RF Amp. Screen
B	1500								RF Amp. Fil.
C14	12		75200	SI12	D6-120		GP1K-120		RF Amp. Cathode
C15	1500		75166	SI1500	D6-152		GP2L-152	501C1	RF Bypass
C16	270		75199	SI270	D6-271		GP2K-271	5GA-T27	RF Coupling
C17	270		75199	SI270	D6-271		GP2K-271	5GA-T27	RF Coupling
C18	390		75641	SI390	D6-391		GP2K-391		RF Coupling
C19	1500		75166	SI1500	D6-152		GP2L-152	501C1	RF Bypass
C20	1500		75166	SI1500	D6-152		GP2L-152	501C1	Conv. Decoupling
C21	6.8		75197	SI6.8NP0	TCZ-6.8		NP0K-6R8		Fixed Trimmer
C22	4		75289				NP0K-040		Fixed Trimmer
C23	39		75196		TCZ-39		NP0K-390		Fixed Trimmer
C24	15		45465		TCZ-15		NP0K-150	5TCC-Q15	Osc. Feedback
C25	.68		71504		TCZ-.68		NP0K-R68		Fixed Trimmer
C26	1500		73748	BPD-0015	DD-152		801-0015	5HK-D15	Conv. Fil.
C27	1500		75166	BPD-0015	DD-152		801-0015	501C1	Fil. Bypass
C28	10000		73960	BPD-01	DD-103			5HK-S1	AGC Filter
C29A	1500		75089	BPD-2X0015	DD-2-152	1W5D15	812-0015	5HK-2D15	RF Bypass
B	1500					1W5D15			RF Bypass
C30	1500		73748	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	AGC Filter
C31	56		71294		TCZ-56		NP0-333-560		Fixed Trimmer
C32	82				TCZ-82		NP0-333-820		Fixed Trimmer
C33	1500		73748	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	AGC Filter
C34A	10000		75877	BPD-01	DD-3-103	1D3S1	821-01	5HK-S1	1st. Video IF Plate
B	10000			BPD-01		1D3S1	821-01	5HK-S1	1st. Video IF Screen
C35	1500		73748	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	1st. Video IF Fil.
C36	1500		73748	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	RF Bypass
C37	47			SI47NP0	TCZ-47		NP0L-470	5TCC-Q47	Fixed Trimmer
C38	270	500	73091	1468-0003	D6-271	5W5T3	GP2K-271	MS-33	IF Coupling
C39A	1500		75089	BPD-2x0015	DD-2-152	1W5D15	812-0015	5HK-2D15	AGC Filter
B	1500					1W5D15			2nd. Video IF Fil.
C40	10000		73960	BPD-01	DD-103	1D3S1	821-01	5HK-S1	2nd. Video IF Screen
C41	1500		73748	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	2nd. Video IF Cathode

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA RCA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C42	10000		73960	BPD-01	DD-103	1D3S1	821-01	5HK-S1	RF Bypass
C43	1500		73748	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	RF Bypass
C44	270	500	73091	1468-0003	D6-271	5W5T3	GP2K-271	MS-33	IF Coupling
C45A	1500		75089	BPD-2x0015	DD-2-152	1W5D15	812-0015	5HK-2D15	AGC Filter
B	1500					1W5D15			Fixed Trimmer
C46	47			SI-47NP0	TCZ-47			NP0L-470	5TCC-Q47	Fixed Trimmer
C47	10000		73960	BPD-01	DD-103	1D3S1	821-01	5HK-S1	3rd. Video IF Plate
C48	1500		73748	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	3rd. Video IF Screen
C49	.1	400	73551	P488-1	DF-104	PTE4P1		4TM-P1	3rd. Video IF Screen
C50	5000		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D5	3rd. Video IF Fil.
C51	1500		73748	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	RF Bypass
C52	270	500	73091	1468-0003	D6-271	5W5T3	GP2K-271	MS-33	IF Coupling
C53	1500		73748	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	4th. Video IF Screen
C54	1500		73748	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	4th. Video IF Cathode
C55	5000		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D5	4th. Video IF Fil.
C56	.047	400	73553	P488-047	DF-503	PTE4S5		4TM-S47	RF Bypass
C57A	1500		75089	BPD-2x0015	DD-2-152	1W5D15	812-0015	5HK-2D15	RF Bypass
B	1500					1W5D15			RF Bypass
C58	270	500	73091	1468-0003	D6-271	5W5T3	GP2K-271	MS-33	IF Coupling
C59	100		39396	SI100	D6-101		GP1K-101	5GA-T1	IF Coupling
C60	10000		73960	BPD-01	DD-103	1D3S1	821-01	5HK-S1	AGC Rect. Cathode
C61	1500		73748	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	AGC Filter
C62	.47	200	73787	P288-47		GT2P5		2TM-P47	AGC Filter
C63	.0047	600	73920	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	AGC Filter
C64	10		53711	SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Video Det. Filter
C65	.0022	600	73595	P688-0022	D6-222	PTE6D2	GP2-333-202	6TM-D22	Video Amp. Cathode
C66	100		39396	SI100N750	TCN-100		N750L-101	5TCU-T1	Contrast Cont. Shunt
C67	.1	400	73551	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C68	.047	400	73553	P488-047	DF-503	PTE4S5		4TM-S47	Video Amp. Cathode
C69	.0022	600	73595	P688-0022	D6-222	PTE6D2	GP2-333-222	6TM-D22	Video Amp. Cathode
C70	.047	600	73582	P688-047	DF-503	PTE6S5		6TM-S47	Video Coupling
C71	390	500	73094	1468-0004	D6-391	5W5T4	GP2K-391	5FM-34	Video Coupling
C72	270		76303	SI270	D6-271	5W5T3	GP2K-271	5GA-T27	Video Coupling
C73	.1	600	73557	P688-1	DF-104	PTE6P1		6TM-P1	Picture Tube Cathode
C74	10			1468-00001	D6-100	5W5Q1	GP1K-100	1FM-41	Sound IF Coupling
C75	10000		73960	BPD-01	DD-103	1D3S1	821-01	5HK-S1	Sound IF Grid
C76A	10000		75877	BPD-01	DD-3-103	1D3S1	821-01	5HK-S1	1st Sound IF Dec.
B	10000			BPD-01		1D3S1	821-01	5HK-S1	1st Sound IF Cathode
C77	4700		73473	BPD-005	DD-502	1D5D5	811-005	5HK-D47	1st Sound IF Fil.
C78	56		71294		TCN-56		N750L-560		2nd Sound IF Grid
C79	10000		73960	BPD-01	DD-103	1D3S1	821-01	5HK-S1	2nd Sound IF Plate
C80	1500		75166	SI1500	D6-152	1W5D15	GP2L-152	501C1	2nd Sound IF Plate
C81	10000		73960	BPD-01	DD-103	1D3S1	821-01	5HK-S1	2nd Sound IF Screen
C82	1500		75166	SI1500	D6-152	1W5D15	GP2L-152	501C1	2nd Sound IF Screen
C83	10000		73960	BPD-01	DD-103	1D3S1	821-01	5HK-S1	2nd Sound IF Fil.
C84	10000		73960	BPD-01	DD-103	1D3S1	821-01	5HK-S1	Ratio Det. Fil.
C85					829-4		532-08-0R5		Variable Trimmer
C86	470	500	39644	1469-0005		5R5T5		MS-35	Diode Load Cap.
C87	470	500	39644	1469-0005		5R5T5		MS-35	Diode Load Cap.
C88	330	500	76473	1469-00035					Diode Load Cap.
C89	.0022	600	73595	P688-003	D6-272	PTE6D3	GP2-333-272	6TM-D3	De-emphasis
C90	.0047	600	73920	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Audio Coupling
C91	.015	200	73757	P288-015		PTE6S15		6TM-S15	Tone Comp.
C92	.0082	400	73808						Tone Comp.
C93	.01	400	73561	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C94	.0047	600	73920	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Tone Comp.
C95	270	500	39638	1468-0003	D6-271		GP2K-271	1FM-33	Tone Comp.
C96	.01	400	73561	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C97	.0047	600	73920	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Audio Output Plate
C98	.047	600	73592	P688-047	DF-503	PTE6S5		6TM-S47	Sync. Coupling
C99	.47	200	73787	P288-47		GT2P5		2TM-P47	Sync. Amp. Cathode
C100	.01	400	73561	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Vert. Sync. Coupling
C101	.0022	600	73595	P688-0022	D6-222	PTE6D2	GP2-333-222	6TM-D22	Vert. Integrator Net.
C102	.0047	600	73920	P688-0047	D6-472	PTE6D5		6TM-D47	Vert. Integrator Net.
C103	.0047	600	73920	P688-0047	D6-472	PTE6D5		6TM-D47	Vert. Integrator Net.
C104	.01	600	73594	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Vert. Osc. Grid Cap.
C105	.047	1000	73597	P1088-047		GT6S5		MB-S5	Vert. Discharge
C106	.22	600	74957	684-25		GP6P25		6TM-P25	Vert. Sweep Coupling
C107	.022	600	73562	P688-022	DF-203	PTE6S2		6TM-S22	Fixed Trimmer
C108	.047	1000	73597	P1088-047		GT6S5		MB-S5	Fixed Trimmer
C109	.047	1000	73597	P1088-047		GT6S5		MB-S5	Fixed Trimmer
C110	.0022	600	73595	P688-0022	D6-222	PTE6D2	GP2-333-222	6TM-D22	Horiz. Sync. Coupling
C111	82	500	73090						Horiz. Sync. Coupling
C112	82	500	73090						Horiz. Feedback
C113	.047	600	73592	P688-047	DF-503	PTE6S5		6TM-S47	Horiz. AFC Plate
C114	.47	200	73787	P288-47		GT2P5		2TM-P47	Horiz. AFC Filter
C115	.022	400	73562	P488-022	DF-203			4TM-S22	Horiz. AFC Filter
C116	.047	400	73553	P488-047	DF-503	PTE4S5		4TM-S47	Horiz. AFC Filter
C117	180	1000	73102						Horiz. Osc. Grid Cap.
C118	.01	600	73594	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Fixed Trimmer
C119	.001	1000	75464	P1088-001		PTE16D1		MB-D1	Horiz. Discharge
C120	.00056	1000	74250						Horiz. Sweep Coupling
C121	100		39396	SI100N750	TCN-100		N750L-101	5TCU-T1	Horiz. Output Screen
C122	.047	1000	73597	P1088-047		PTE16S5		MB-S5	Horiz. Output Screen
C123	.22	400	73794	P488-22		GT4P25		4TM-P22	Horiz. Output Cathode
C124	8.2		76009						Fixed Trimmer
C125	.018	1000	74727						Damper Filter
C126	.022	1000	73810	P1088-022		PTE16S2		MB-S2	Damper Filter
C127	500	20000	74947	HV20A	TV1-502		41U-501		HV Filter
C128	.047	400	75071	P488-047	DF-503	PTE4S5		4TM-S47	Line Filter
C129	.047	400	75071	P488-047	DF-503	PTE4S5		4TM-S47	Line Filter

† Some Models use .0022 MFD in this application (Part No. 73595)
‡ Some Models use .0015 MFD in this application

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	2.5Meg		75513	Concentrikit			
B	1.5Meg			Bll-239 *	RTV-194	SBBT-693-S	Tone Control - Panel
				B18-139XX *			Volume Control Tapped @ 250KΩ & 500KΩ - Rear
C	Shaft End			E-187 *			Attach per instructions in Concentrikit
D	Switch			76-1 *			Attach per instructions in Concentrikit
				Concentrikit			
R2A	1Meg		75215	Bll-137 *	RTV-110	SBB-510	Vertical Hold Control- Panel
B	50KΩ			Bll-123 *			Horizontal Hold Control- Rear
C	Shaft End			E-187 *			Attach to R2A per instructions.
R3A	50KΩ		75216	Bll-123 *	RTV-191	SBB-511	Brightness Control- Panel
B	3500Ω			Bl7-114 *			Contrast Control - Rear
C	Shaft End			E-187 *			Attach to R3A per instructions.
R4A	20KΩ		75516	Qll-119	AG-36-S	AN-22	Width Control
B	Shaft			Not Req.	FKS-1/4	AK-1	Attach to R4A per instructions.
R5A	5KΩ		76701	Qll-114	AG-19-S	AN-10	Vertical Linearity Control
B	Shaft			Not Req.	FKS-1/4	AK-1	Attach to R5A per instructions.
R6A	2.5Meg		76448	Qll 239	AG-84-S	AN-83	Height Control
B	Shaft			Not Req.	FKS-1/4	AK-1	Attach to R6A per instructions.

* Additional parts to be used with Concentrikit

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE NOTED
R7	3900Ω		503239	BTS-3900	AGC Network
R8	150Ω 20%		504115	BTS-150	AGC Network
R9	10MegΩ		503810	BTS-10Meg	AGC Network
R10	22KΩ		503322		RF Amp. Screen
R11	27Ω		503027		RF Amp. Cathode
R12	3900Ω		503239	BTS-3900	RF Amp. Coil Shunt
R13	10KΩ 20%		504310		Osc. Plate
R14	100KΩ 20%		504410		Osc. Grid
R15	10KΩ 5%		3078		Converter Coil Shunt
R16	100KΩ 20%		504410		Series Test Point
R17	3300Ω		503233	BTS-3300	RF Amp. Plate
R18	100KΩ 20%		504410		Mixer Grid
R19	820Ω		503282		Mixer Grid Coil Shunt
R20	10KΩ		74589		1st. Video IF Coil Shunt
R21	680Ω		503168	BTS-680	1st. Video IF Coil Shunt
R22	82Ω		503082	BTS-82	1st. Video IF Amp. Cathode
R23	1000Ω 20%		504210	BTS-1000	AGC Network
R24	33KΩ		503333		1st. Video IF Amp. Screen
R25	1000Ω 20%		504210	BTS-1000	1st. Video IF Amp. Decoupling
R26	4700Ω 5%		502247	BTS-4700 5%	2nd. Video IF Amp. Grid
R27	82Ω		503082	BTS-82	2nd. Video IF Amp. Cathode
R28	1000Ω 20%		504210	BTS-1000	AGC Network
R29	47KΩ 20%		504347		2nd. Video IF Amp. Screen
R30	12KΩ 5%	1	512312		2nd. Video IF Amp. Plate
R31	1000Ω 20%		504210	BTS-1000	2nd. Video IF Amp. Decoupling
R32	470KΩ		503447		Isolation
R33	82Ω		503082	BTS-82	3rd. Video IF Amp. Cathode
R34	33KΩ		503333		3rd. Video IF Amp. Screen
R35	1000Ω 20%		504210	BTS-1000	3rd. Video IF Amp. Decoupling
R36	180Ω		503118	BTS-180	4th. Video IF Amp. Cathode
R37	68KΩ 5%		502368	BTS-68K 5%	Trap Coil Shunt
R38	1000Ω 20%		504210	BTS-1000	4th. Video IF Amp. Screen
R39	6800Ω 5%	1	512268		4th. Video IF Amp. Plate
R40	1000Ω 20%		504210	BTS-1000	4th. Video IF Amp. Plate Decoupling
R41	33KΩ		503333		4th. Video IF Amp. Screen Decoupling
R42	150KΩ		503415	BTS-150K	AGC Network
R43	100Ω 20%		504110	BTS-100	Decoupling
R44	100Ω 20%	2	504110	BTS-100	Decoupling
R45	10KΩ	2	523310		Voltage Divider
R46	13KΩ	5	76065		Voltage Divider - Wire Wound
R47	18KΩ		503318	BTS-18K	AGC Network
R48	18KΩ		503318	BTS-18K	AGC Network
R49	33KΩ 20%		504333	BTS-33K	AGC Network
R50	5600Ω 20%		502256	BTS-5600	Video Detector Load
R51	220Ω		503122	BTS-220	Video Amp. Cathode
R52	100KΩ		503410	BTS-100K	Voltage Divider
R53	4700Ω 5%		502247	BTS-4700 5%	Video Amp. Plate
R54	15KΩ	1	513315	BTA-15K	Video Amp. Decoupling
R55	6800Ω	1	523268	BTA-6800	Decoupling
R56	120KΩ		503412	BTS-120K	Voltage Divider
R57	3300Ω		503233	BTS-3300	Voltage Divider
R58	220Ω		503122	BTS-220	Video Amp. Cathode
R59	560KΩ		503456	BTS-560K	Video Amp. Grid
R60	2700Ω		503227	BTS-2700	Video Amp. Plate
R61	4700Ω	1	513247	BTA-4700	Video Amp. Plate
R62	4700Ω		503247	BTS-4700	Isolation
R63	4700Ω		503247	BTS-4700	Isolation
R64	56KΩ		503356	BTS-56K	AGC Amp. Grid
R65	100KΩ		503410	BTS-100K	AGC Amp. Plate
R66	56KΩ		503356	BTS-56K	AGC Amp. Plate
R67	220KΩ		503422	BTS-220K	AGC Amp. Cathode
R68	47KΩ		503347	BTS-47K	Sync. Separator Plate
R69	220KΩ		503422	BTS-220K	DC Restorer Load
R70	220KΩ		503422	BTS-220K	DC Restorer Load
R71	220KΩ		503422	BTS-220K	AGC Network
R72	150KΩ 20%		504415	BTS-150K	AGC Network
R73	47KΩ		503347	BTS-47K	AGC Network
R74	820KΩ		503482	BTS-820K	Picture Tube Grid
R75	150KΩ		503415	BTS-150K	Picture Tube Cathode
R76	56KΩ		76703		1st Sound IF Coil Shunt
R77	470KΩ		503447		1st Sound IF Grid
R78	82Ω		503082	BTS-82	1st Sound IF Cathode
R79	1000Ω 20%		504210	BTS-1000	1st Sound IF Decoupling
R80	47KΩ		503347	BTS-47K	2nd Sound IF Grid
R81	68Ω 5%		34763		2nd Sound IF Cathode

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA PART No.	IRC PART No.	IDENTIFICATION CODES
R82	47KΩ		503347		2nd Sound IF Screen
R83	12KΩ		503312	BTS-12K	Voltage Divider
R84	1000Ω 20%		504210	BTS-1000	2nd Sound IF Amp. Decoupling
R85	47Ω		503047		Balancing
R86	1000Ω 5%		502212		Balancing
R87	1000Ω 5%		502210		Balancing
R88	22KΩ		504322		De-emphasis
R89	6800Ω 5%		14659	BTS-6800 5%	Ratio Detector Diode Load
R90	6800Ω 5%		14659	BTS-6800 5%	Ratio Detector Diode Load
R91	27KΩ		503327	BTS-27K	Tone Compensation
R92	22KΩ		503322	BTS-22K	Tone Compensation
R93	10Meg 20%		504610	BTS-10Meg	1st. Audio Amp. Grid
R94	330KΩ		503433	BTS-330K	1st. Audio Amp. Plate
R95	470KΩ		504447	BTS-470K	Audio Output Grid
R96	100Ω		503110	BTS-100	Audio Output Cathode
R97	390Ω		513139	BTA-390	Audio Output Cathode
R98	470Ω		513147	BTS-470	Audio Output Decoupling
R99	18KΩ		503318	BTA-18K	Voltage Divider
R100	10KΩ		503310	BTS-10K	Voltage Divider
R101	18KΩ		513318	BTS-18K	Sync. Amp. Plate
R102	2200Ω		504222	BTS-2200	Sync. Amp. Cathode
R103	22KΩ		503322	BTS-22K	Integrator Network
R104	22KΩ		503322	BTS-22K	Integrator Network
R105	8200Ω		503282	BTS-8200	Integrator Network
R106	8200Ω		503282	BTS-8200	Integrator Network
R107	3.9Meg	1		BTA-3.9Meg	Vertical Osc. Grid
R108	820KΩ			BTS-820K	Vertical Osc. Grid See Note 1
R109	1Meg 20%		504510	BTS-1Meg	Vertical Osc. Trans. Shunt
R110	270KΩ		503427	BTS-270K	Vertical Osc. Plate
R111	12KΩ 5%		30436	BTS-12K 5%	Vertical Peaking
R112	2.2Meg		503522	BTS-2.2Meg	Vertical Output Grid
R113	1500Ω	1	513215	BTA-1500	Vertical Output Cathode
R114	15KΩ 5%		503315	BTS-15K 5%	Vertical Linearity Control
R115	150KΩ		503415	BTS-150K	Voltage Divider
R116	220KΩ	1		BTA-220K	Voltage Divider
R117	220KΩ		503422	BTS-220K	Damping
R118	1000Ω		504210	BTS-1000	Vertical Output Decoupling
R119	330KΩ		503433	BTS-330K	Horizontal AFC Grid
R120	150KΩ		503415	BTS-150K	AFC Feedback
R121	820KΩ		503482	BTS-820K	Horizontal AFC Grid
R122	330KΩ	1	512433	BTA-330K	Horizontal AFC Cathode
R123	82KΩ	1	513382	BTA-82K	Horizontal AFC Cathode
R124	3900Ω		503239	BTS-3900	Horizontal AFC Filter
R125	8200Ω 5%		502282	BTS-8200 5%	Horizontal Osc. Coil Shunt
R126	150KΩ	1	512415	BTA-150K	Horizontal Osc. Grid
R127	82KΩ 5%	1	512382	BTA-82K 5%	Horizontal Osc. Plate
R128	47Ω 20%		504047		Parasitic Suppressor
R129	1Meg		503510	BTS-1Meg	Horizontal Output Grid
R130	100Ω	2	523110		Horizontal Output Cathode
R131	6800Ω	1	513268	BTA-6800	Horizontal Output Screen
R132	33KΩ		503333	BTS-33K	Voltage Divider
R133	1Meg		504510	BTS-1Meg	Damping
R134	100KΩ	2	524410	BTB-100K	Isolation
R135	4000Ω	10	75512	1 3/4A-4000	Voltage Divider Wire Wound
R136	56KΩ	1	513356	BTA-56K	Voltage Divider
R137	27KΩ	2	523237	BTB-27K	Voltage Divider
R138	4300Ω	5	76066		Voltage Divider Wire Wound
R139	220Ω	1		BTA-220	Voltage Divider
R140	82KΩ	1	513382	BTA-82K	Voltage Divider
R141	68KΩ	1	513368	BTA-68K	Voltage Divider

Note 1. Some models use a 1.2Meg resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC	720VCT	5VAC	6.3VAC @8A	75508		P-3070	TP-370
	@1.5A	.200ADC	@3A	8EC.4				
				6.3VAC @1.2A				

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	165Ω	1310Ω	74144	A-8122	A-4003 ②	TB0-2	Vert. Osc. Trans.
T3	250Ω	0Ω	75519		HV0-8		Horiz. Output Trans.
	Tapped @22Ω						
T4	400Ω	.32Ω	74950	A-8140	A-3080 ③		Vert. Output Trans.
T5A	43Ω		74952	DY-10	MDF-30		Hor. Deflection Coils
B	3.5Ω						Vert. Deflection Coils

② Drill one new mounting hole.
③ Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T8	7KΩ	3.4Ω	370Ω	.43Ω	75520	A-3878 ①	A-3020	RO-13 ①	② Drill One New Mounting Hole

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PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	RCA PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	3.4Ω	75022	ST-117 Mod. P8-T	8A31	
	CONE DIA.	V. C. DIA.				
SP2	7 3/8"	1"	75024			

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.200ADC	45Ω	.8HY	73154	C-2326 ②	C-2991	TR-3300②	② Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	RCA PART No.	MERIT PART No.	
L2	Ant. Coil	.6Ω	.6Ω	73591		
L3	Ant. Coil	.6Ω	.6Ω	73591		
L4	IF Trap	.2Ω		75242		
L5	Ant. Coil Shunt	0Ω		75241		
L6	IF Trap	.2Ω		75242		
L7	FM Trap	0Ω		75449		
L8	Ant. Coils	0Ω		75180		Complete with Rotor, Coils, C11, C12, R7, R8 & R12
L9	Fil. Choke	0Ω		73477		
L10	RF Coil	0Ω		75183		Includes .8-3.8 Trimmer
L11	RF Coils	0Ω		75179		Complete with Rotor, Coils C17 & R17
L12	Mixer Grid Coils	0Ω		75178		Complete with Rotor, Coils, C16, C18, R16, R18 & R19
L13	Mixer Grid Coil	0Ω		75182		Includes .8-3.8Trimmer.
L14	Osc. Coils	0Ω		75175		Includes .8-3.8 Trimmer C24 & C25
L15	Fil. Choke	0Ω				
L16	Mixer Plate Loading Coil	0Ω		75185		
L17	RF Choke	.3Ω		75202		
L18	Conv. Trans.	.4Ω	.1Ω	75181		
L19	1st Video IF	.1Ω	.6Ω	74589		Includes Trap
L20	Fil. Choke	0Ω		73477		
L21	2nd Video IF	.2Ω		74590		Includes Trap
L22	3rd Video IF	.2Ω		76264		Includes Trap
L23	Fil. Choke	0Ω		73477		
L24	Plate Choke	2.8Ω		76285		Wound on 22KΩ resistor
L25	4th Video IF	.1Ω		73574		Includes Trap
L26	5th Video IF	.4Ω		75210		Tap ⓐ .2Ω
L27	Sound Take-Off Trans.	6Ω		76703		Tap ⓐ 1.2Ω
L28	Peaking Coil	2.8Ω		75299		36Microhenries, Orange and White Dots
L29	Peaking Coil	11Ω		75252		500Microhenries, Green and White Dots
L30	4.5MC Trap	2.4Ω		75251		Wound on 47MMF Capacitor
L31	4.3MC Trap	2.3Ω		76704		Wound on 47MMF Capacitor
L32	Peaking Coil	11Ω		75252		500Microhenries, Green and White Dots
L33	Peaking Coil	11Ω		75252		500Microhenries, Green and White Dots
L34	Peaking Coil	4.9Ω		75253		120Microhenries, Blue and Red Dots
L35	Sound IF	4.8Ω	3Ω	76438		
L36	Fil. Choke	0Ω		73477		
L37	Ratio Det. Trans.	4Ω	.3Ω	76702		Tap ⓐ .4Ω
L38	Horiz. Osc.	105Ω	33Ω	75213		Tap ⓑ 31Ω
L39	Horiz. Lin.	36Ω		71449		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				REMARKS
			RCA PART No.		LITTELFUSE PART No.		
			FUSE	HOLDER	FUSE	HOLDER	
M1	3AG Pigtail	1/4A.	73600		318.250		

MISCELLANEOUS

ITEM No.	PART NAME	RCA PART No.	NOTES
M2	RF Tuner	274139	
M3	Switch	76010	AGC
M4	Switch	33491	TV-Phono
M5	Focus Magnet	76168	
M6	Ion Trap	74953	
B2, B4	Trimmer	75217	10-160MMF Dual (Horiz. Lock, Horiz. Drive)
	Knobs	76595	Brightness, Vert. Hold & Tone (Maroon)
	Knob	74960	Channel Selector (Maroon)
	Knob	76591	Fine Tuning (Maroon)
	Knobs	74963	Contrast, Horiz. Hold & Off/On- Volume (Maroon)
	Spring	14270	Retaining for Knobs 74960 & 76595
	Spring	72845	Retaining for Knobs 76591
	Spring	30330	Retaining for knob 74963
	Washer	75457	Felt (Between channel selector and fine tuning knobs).

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL OSCILLATOR ADJUSTMENTS
With a clip lead short terminals C and D of L38.

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to fully clockwise.

Adjust the horizontal frequency slug, (B1), until the picture is out of synchronization and the horizontal blanking signal appears in the picture as a single vertical bar.

Turn the hold control approximately 1/4 turn counter-clockwise and examine the picture width and linearity.

If the picture width and linearity are not approximately correct make the adjustment outlined under WIDTH AND HORIZONTAL LINEARITY ADJUSTMENTS. If linearity adjustments are made, repeat the adjustment of B1.

Turn the hold to fully counter-clockwise, the picture may remain in sync. if so adjust B1 slightly and momentarily interrupt the signal by switching to another channel and back again. Repeat this procedure until the picture falls out of sync. and shows diagonal bars sloping downward to the left.

Slowly turn the hold control clockwise and carefully note the least number of sloping bars present just before the picture pulls into sync.

If more than 9 bars are present just before the picture synchronizes adjust the horizontal lock trimmer, (B2), slightly clockwise.

If less than 7 bars are present adjust B2 counter-clockwise .

Repeat the check and adjustment of B2 until 7 to 9 bars are present at the pull-in point.

Remove the short from terminals C and D of L38.

Turn the hold control to fully clockwise.

Adjust the horizontal waveform slug, (B3), until the blanking bar again appears in the picture.

Connect the low capacity probe of an oscilloscope to terminal "C" of L38.

Turn the hold control approximately 1/4 turn counter-clockwise to synchronize the picture.

Adjust the waveform slug, (B3), until the broad and narrow peaks of the waveform on the scope are of equal height as shown in fig. 6. If necessary during adjustment of B3, adjust the horizontal hold control to keep the picture synchronized.

Remove the oscilloscope connection.

Turn the hold control to maximum counter-clockwise and momentarily interrupt the signal by switching to another channel and back again.

Slowly turn the hold control clockwise and carefully note the least number of bars present just before the picture synchronizes.

If more than 2 bars are present adjust B2 clockwise, if less than 2 bars are present adjust B2 counter-clockwise.

Repeat the check and adjustment of B2 until 2 bars are present at the pull-in point.

Turn the hold control to fully clockwise. The picture should be out of sync. to the extent of one vertical blanking bar.

If not adjust B1 to obtain this condition.

WIDTH AND HORIZONTAL LINEARITY ADJUSTMENTS

Turn the horizontal drive trimmer, (B4), counter-clockwise as far as possible without stretching the left side of the picture.

Turn the horizontal linearity slug, (B5), out until appreciable loss of width occurs, then in until approximately maximum width with best linearity is obtained.

Adjust the width control until the picture is slightly wider than necessary to fill the mask horizontally.

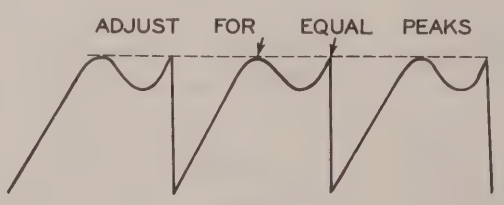

FIG. 6

CRITICAL LEAD DRESS

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1. All leads in the picture and sound IF circuits must be dressed as short and direct as possible with the exception of C31, C38, C44, and C52 which are to be dressed with enough slack so as not to have to move the body of the capacitor to align that particular stage.
2. Dress all 1500 MMF .005 MFD and .01 MFD capacitors in the IF section with leads as short as possible.
3. Dress all wires between L19 and the RF unit in clamp.
4. Dress C76 to act as shield for lead between pin 5 of V10 socket to L35 and picture IF circuits.
5. Dress the bodies of resistors R26, L24, R39, R88, and capacitor C74 as close to tube pin as possible.
6. Dress L24 with coded end as close to pin 2 of V7 socket as possible.
7. The length of the bus wire from pin 2 of V11 to ground should not be shortened or rerouted.
8. Dress R93 as close to chassis with leads as short as possible.
9. Dress C56 with leads as short as possible and away from M3.
10. Keep the leads on C59 as short and direct as possible.
11. Dress all components connected to V8 socket up and away from the chassis except L28.
12. Keep the body and coded end of L28 as close to pin 2 of V7 socket as possible.
13. Dress the 4.5MC trap L30 up and away from the chassis base.
14. Dress C67 up in the air and towards V7 socket.
15. Dress R50 with body as close as possible to pin 2 of V8 socket.
16. Keep body of R49 as close as possible to pin 2 of V7 socket.
17. Dress C98 and C70 away from C67, C115 and C117.
18. Dress the white wire from picture control R28 away from the chassis.
19. Dress all slack on kine socket leads under chassis.
    Dress brown wire away from any components associated with V7 or V8.
20. The green lead from the kinescope socket should be dressed away from all other leads and components and away from V8.
21. Dress R61 towards chassis rear apron.
22. Dress all leads in clamps on rear apron away from V12, V6, V7, V8 sockets and M4.
23. Dress green wire from B2 up and away from chassis.
24. Dress blue wire of L30 toward front apron of chassis.
25. Dress C117 down next to the chassis base.
26. Dress blue/white wire from height control R4 under R54.
27. Dress R119, R121, R122, R123, and R126 up and away from the chassis and with a half inch clearance from the soldering point.
28. Dress the yellow wire from pin 3 of V17 socket over C117.
29. Dress both leads of C124 away from the body of the capacitor.
30. Dress fuse in high voltage compartment so as not to short circuit to ground.
31. Dress blue and blue/yellow wire from power transformer in 3 clamps on chassis base and away from M4 and video section.
32. Dress both wires on M3 away from blue/yellow damper leads of T1.
33. Dress the brown wire from pin 8 of V21 socket away from V13 socket.
34. Dress all 2 watt resistors away from each other and away from all wires and other components.

PHOTOFACT* Folder

SILVERTONE MODEL 144
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DATE 2-52 SET 160 FOLDER 11

SILVERTONE MODEL 144
(Ch. 478.312 & Radio Ch. 478.240)

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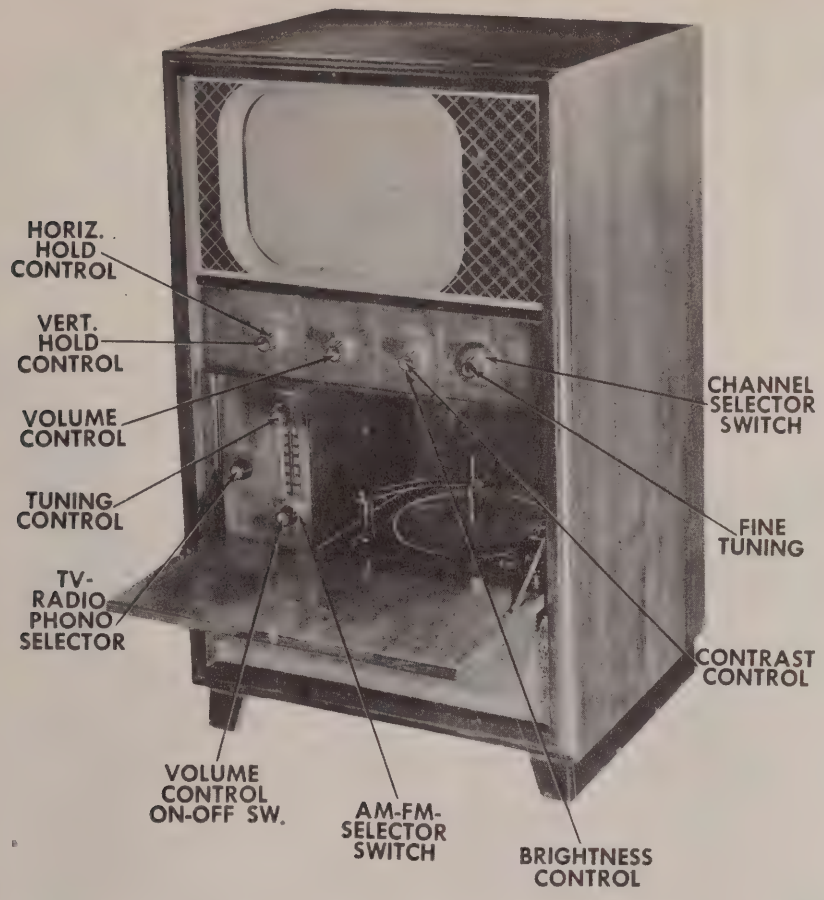
DENVER, COLORADO



SILVERTONE MODEL 144
(Ch. 478.312 & Radio Ch. 478.240)

TRADE NAME	Silvertone Model 144 (Ch. 478.312 & Radio Ch. 478.240)
MANUFACTURER	Sears Roebuck & Co., 925 S. Homan, Chicago, Ill.
TYPE SET	TV-AM-FM-Phono Combination
TUBES	Twenty Seven
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 2 Amp. @ 117VAC (TV) .4 Amp. @ 117 VAC (Radio)
TUNING RANGE—	(TV) Channels 2 thru 13, (FM) 88-108MC, (AM) 535-1600KC

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FOR SERVICE INFORMATION ON RECORD CHANGER SEE VM MODEL 406 PHOTOFACT SET 102 FOLDER 16 OR RECORD CHANGER MANUAL CM-3

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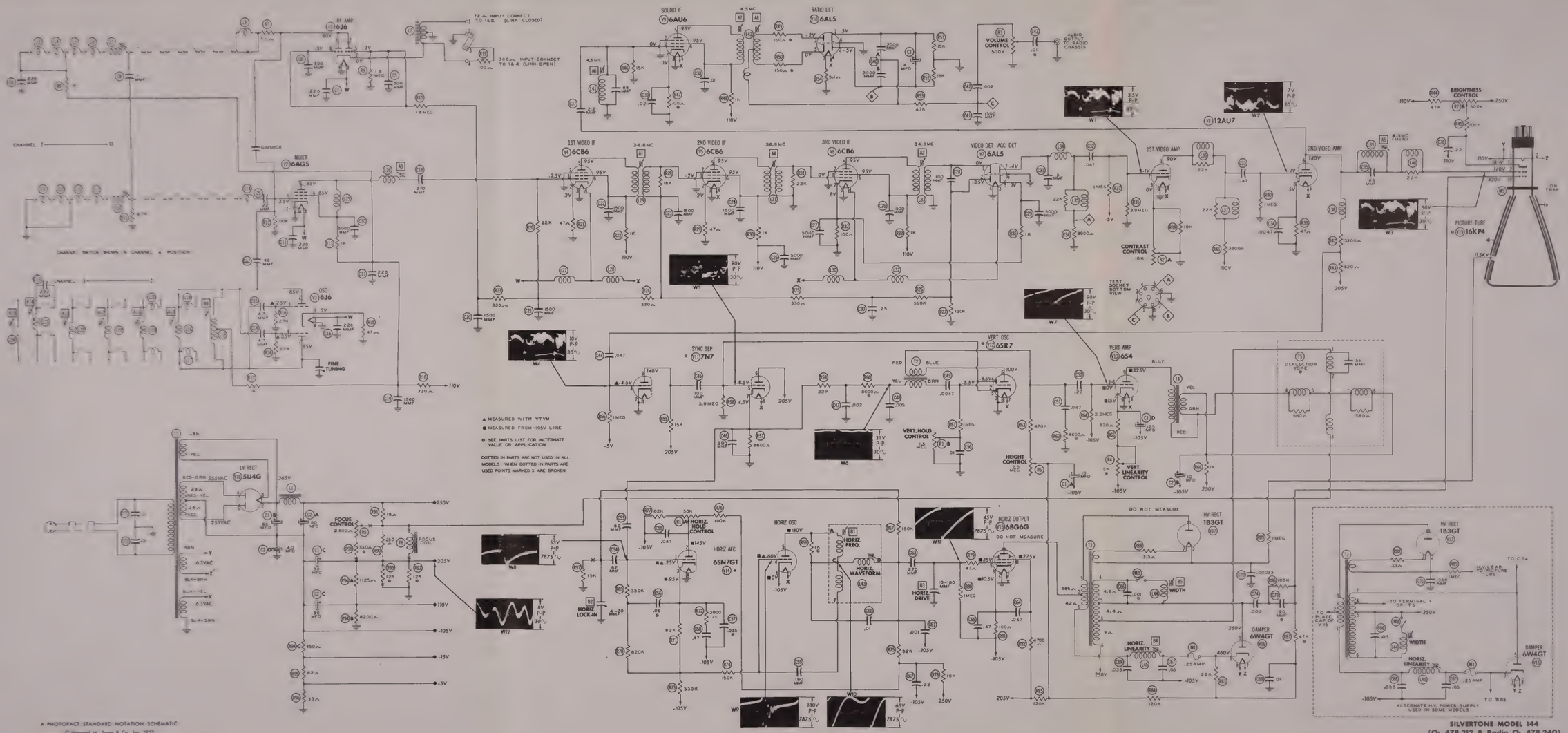

SILVERTONE MODEL 144
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CHASSIS TOP VIEW

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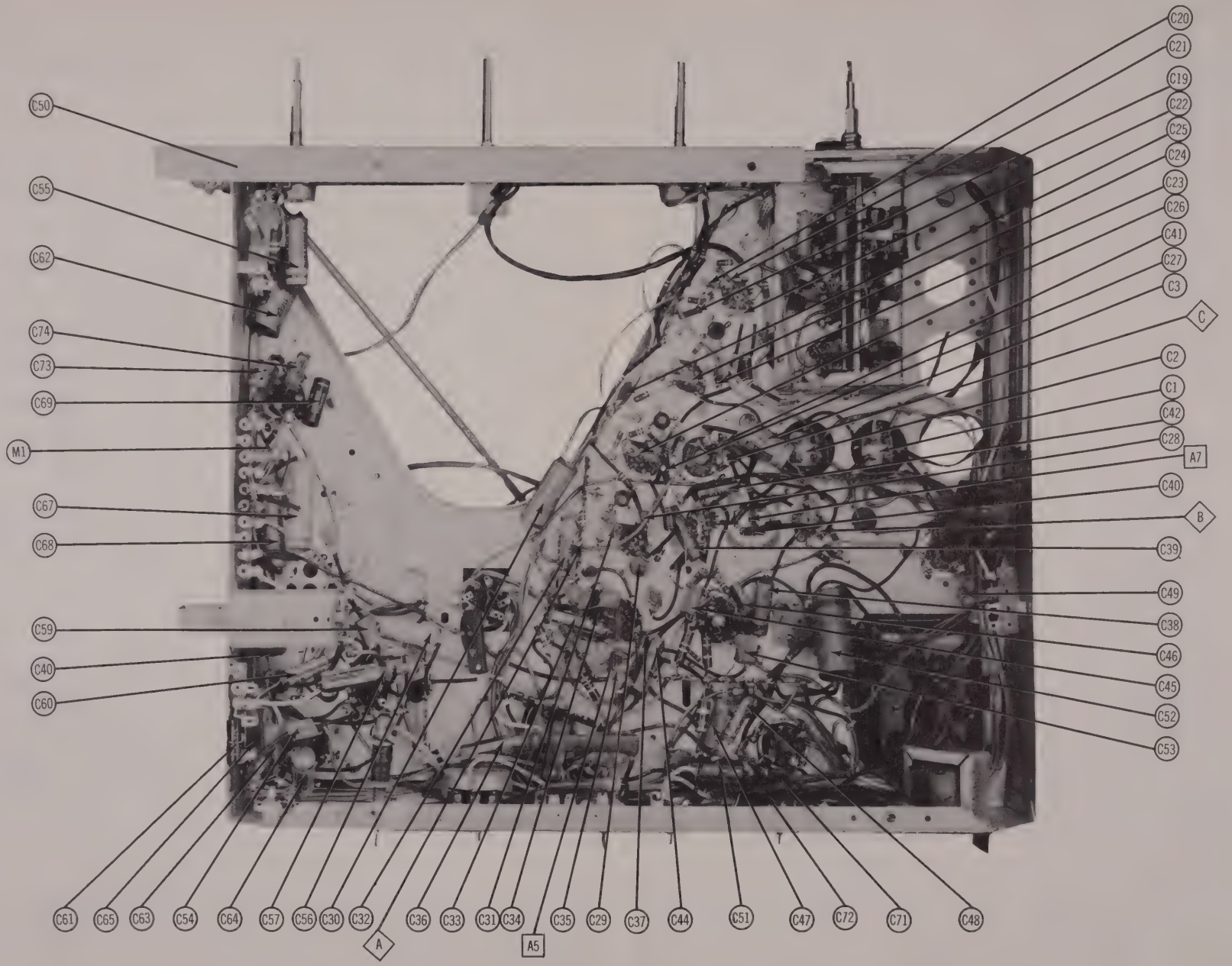

CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

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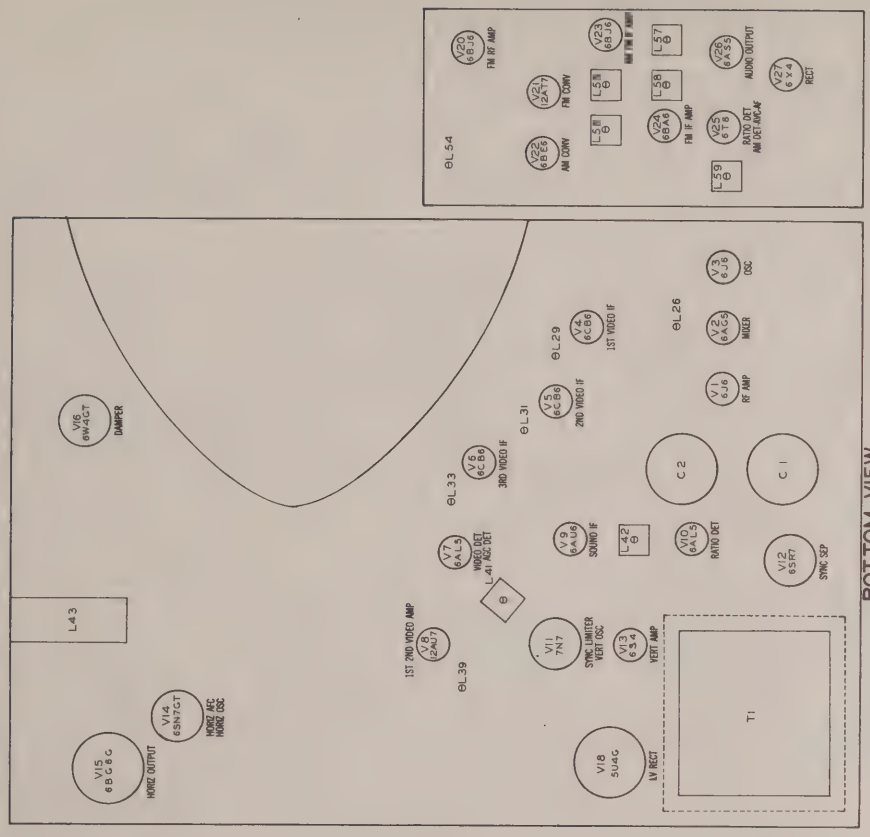
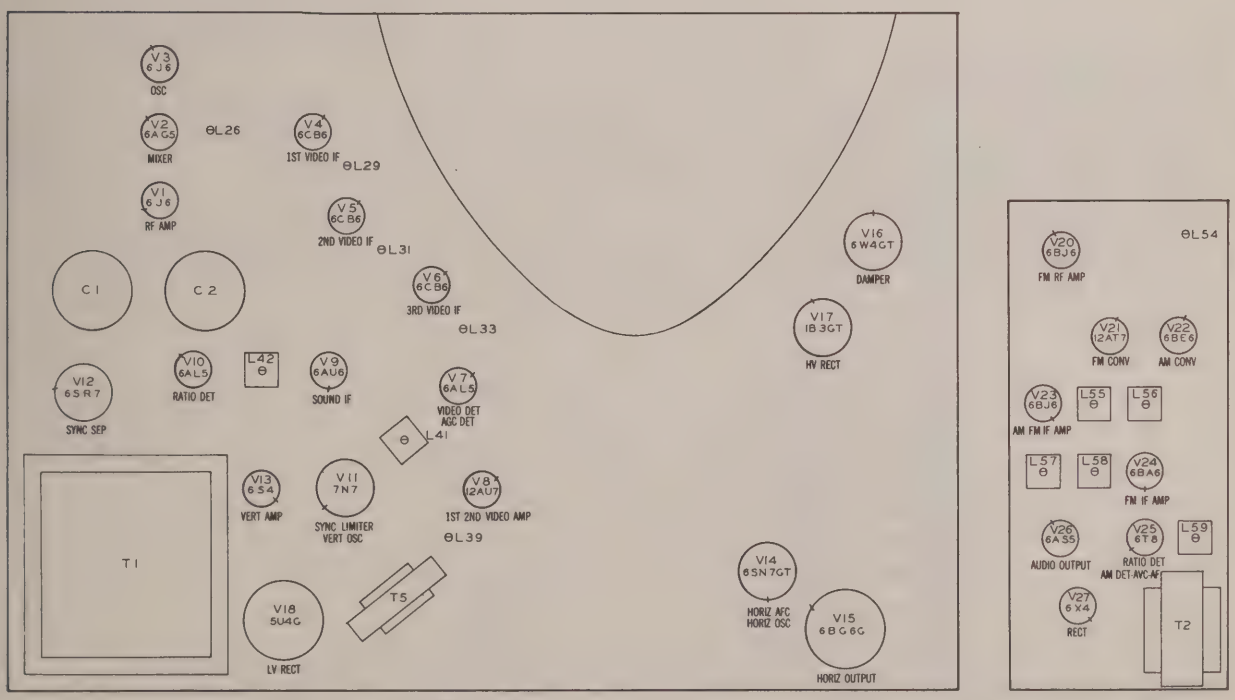




TOP VIEW

TUBE PLACEMENT CHART

SILVERTONE MODEL 144
(Ch. 478.312 & Radio Ch. 478.240)

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube, (V14), from its socket.
The TV portion may be operated without the radio connected, however the radio must be connected in order to hear the TV sound.

VIDEO IF ALIGNMENT

Remove the oscillator tube, (V3) from its socket to prevent the possibility of erroneous indications.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield (loating over mixer tube, (V2). Low side to chassis.	34.8MC (unmod)	Any	DC probe to point (A). Common to chassis.	A1, A2	Adjust for maximum deflection. Attenuate signal generator to maintain 1.5 volt reading.
2.	"	"	36.9MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to an ungrounded tube shield floating over mixer tube, (V2). Low side to chassis.	35MC (10MC Swp)	32.8MC 37.3MC	Any	Vert. Amp. to point (A). Low side to chassis.		Attenuate sweep gen. to obtain 1.5 volt peak to peak response curve. Check for response curve similar to fig.1. If necessary retouch A1 thru A4 for proper response.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4	.005MFD	High side to pin 2, (grid), of 12AU7, (V8). Low side to chassis.	Not used	4.5MC (400%mod)	Any	Vert. Amp. thru 47K to pin 2 of picture tube.	A5	Adjust for MINIMUM 400% indication on scope.

After alignment is completed and set restored to normal, connect an antenna and tune in a strong TV station. Examine the picture for 4.5MC interference, (grain appearance in horizontal lines). If interference is present readjust A5 to eliminate or minimize it.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.005MFD	High side to pin 7, (grid) of 12AU7, (V8). Low side to chassis.	4.5MC (unmod.)	Any	DC probe to point (B). Common to chassis.	A6, A7	Adjust for maximum deflection.
6.	"	"	"	"	DC probe to point (C). Common to chassis.	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.005MFD	High side to pin 7, (grid) of 12AU7, (V8). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to point (B). Low side to chassis.	A6, A7	Disconnect stabilizor capacitor C3. Adjust for maximum amplitude and symmetry as per fig. 2.
6.	"	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A8	Reconnect capacitor C3. Adjust A8 so 4.5 MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Replace the oscillator tube (V3) in its socket.
The channel 2 oscillator coil is connected in parallel with all of the other channel coils, therefore it is important that channels 2 be aligned first. The order of alignment for the remaining channels is not important. The seven oscillator coils are so arranged that channels 3 thru 12 are paired, with one variable and two fixed coils. Each pair of channels are adjusted with only one adjustment, therefore only the channels available in the area where the set is to operate should be aligned.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω carbon resistors.	Across antenna terminals with 120Ω in each lead.	57MC (10MC Swp)	55.25MC 59.75MC	2	Vert. Amp. to point (A). Low side to chassis.	A9	Adjust to place markers as shown in fig. 4.
		63MC (10MC Swp)	61.25MC 65.75MC	3 or 4		A10	
		69MC (10MC Swp)	67.25MC 71.75MC				
		79MC (10MC Swp)	77.25MC 81.75MC	5 or 6		A11	
		85MC (10MC Swp)	83.25MC 87.75MC				
		177MC (10MC Swp)	175.25MC 179.75MC	7 or 8		A12	
		183MC (10MC Swp)	181.25MC 185.75MC				
		189MC (10MC Swp)	187.25MC 191.75MC	9 or 10		A13	
		195MC (10MC Swp)	193.25MC 197.75MC				
		201MC (10MC Swp)	199.25MC 203.75MC	11 or 12		A14	
		207MC (10MC Swp)	205.25MC 209.75MC				
		213MC (10MC Swp)	211.25MC 215.75MC	13		A15	

THE RF AND MIXER PORTION OF THIS TUNER HAS BEEN PROPERLY ALIGNED AT THE FACTORY AND IS VERY STABLE. ALIGNMENT OF THIS PORTION SHOULD NOT BE REQUIRED IN THE FIELD.

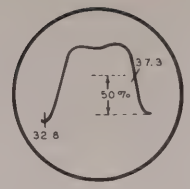


FIG. 1

FIG. 2

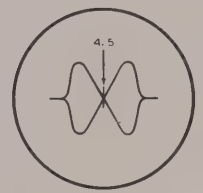


FIG. 3

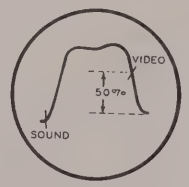
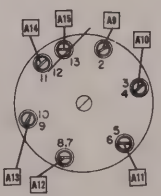


FIG. 4



RADIO ALIGNMENT INSTRUCTIONS

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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set pointer 13/32" from the center of the tuning shaft.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
8	.05MFD	High side to Pin 7, (Grid), of6BE6, (V22). Low side to chassis.	455KC (400% Mod.)	AM (CCW)	Tuning gang fully open.	Across voice coil.	A16, A17, A18, A19	Adjust for maximum output
9		Loop	1620KC	"	"	"	A20	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
10		Loop	1400KC	"	Tune for max. output	"	A21	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 5%) resistors in series from Point (D) to chassis. The junction of these two resistors is alignment Point (E) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
11.	.01MFD	High side to Pin 1, (Grid), of 6BJ6, (V23). Low side to chassis.	10.7MC (unmod.)	FM (CW)	Tuning gang fully open.	DC probe to Point (D). Common to chassis.	A22, A23, A24	Adjust for max. deflection.
12.	"	High side to Pin 2 (grid) of 12AT 7, (V21). Low side to chassis.	"	"	"	"	A25, A26	Adjust for max. deflection.
13.	"	"	"	"	"	DC probe to Point (E). Common to Point (D).	A27	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
11.	.01MFD	High side to Pin 1, (Grid), of 6BJ6, (V23). Low side to chassis.	10.7MC (450KC swp)	FM (CW)	Point of non-interference.	Vert. amp. to Point (D). Low side to chassis.	A22, A23 A24	Disconnect stabilizor cap. C74. Adjust for maximum amplitude and symmetry as per Fig. 5.
12.	"	High side to Pin 2, (grid) of 12 AT7, (V21). Low side to chassis.	"	"	"	"	A25, A26	"
13.	"	"	"	"	"	Vert. amp. to Point (E). Low side to chassis.	A27	Reconnect capacitor C74. Adjust A27 so 10.7MC occurs at center of crossover lines as per Fig. 6. SLIGHTLY retouch A22 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
14.	300Ω carbon resistors	High side thru 300Ω to ungrounded FM antenna terminals. Low side to chassis	109MC (unmod)	FM	Tuning gang fully open.	DC probe to Point (D). Common to chassis.	A28	Adjust for max. deflection.
15.	"	"	87.5MC	"	Tuning gang fully closed.	"	L52	Check coil with a tuning wand. If necessary expand or compress coil turns for max. deflection. If coil is changed repeat steps 14 & 15 until no further change is required.
16.	"	"	106MC	"	Tune for max. deflection.	"	A29	Adjust for max. deflection.
17.	"	"	90MC	"	"	"	L48	Check coil with a tuning wand. If necessary expand or compress coil turns for max. deflection. If coil is changed repeat steps 16 & 17 until no further improvement can be made.

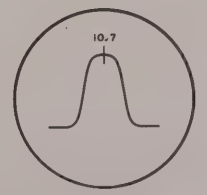


FIG. 5

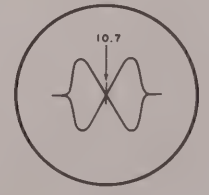


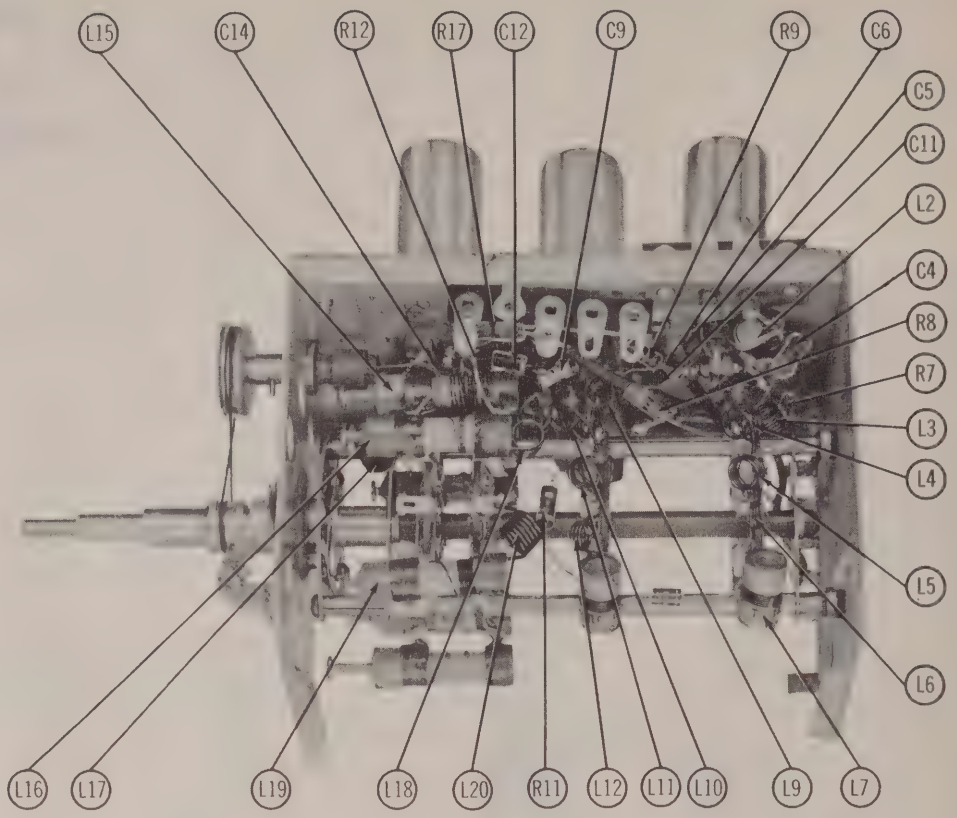
FIG. 6

SILVERTONE MODEL 144
(Ch. 478.312 & Radio Ch. 478.240)

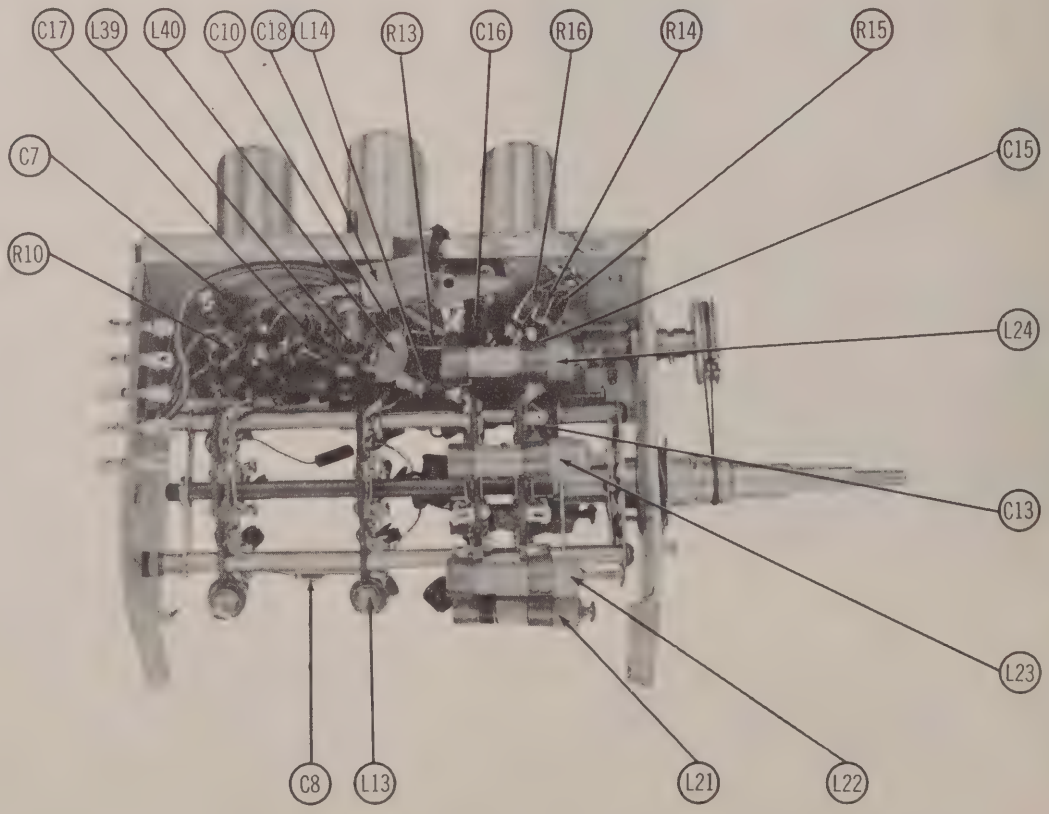
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	†2.8KΩ	†2.8KΩ	.1Ω	0Ω	900KΩ	900KΩ	.1Ω		
V 2	6AG5	100KΩ	0Ω	.1Ω	0Ω	†2.8KΩ	†2.8KΩ	0Ω		
V 3	6J6	†2.8KΩ	†2.8KΩ	.1Ω	0Ω	27KΩ	27KΩ	47Ω		
V 4	6CB6	700KΩ	47Ω	0Ω	.1Ω	†2.5KΩ	†2.5KΩ	0Ω		
V 5	6CB6	680KΩ	47Ω	0Ω	.1Ω	†2.5KΩ	†2.5KΩ	0Ω		
V 6	6CB6	.4Ω	100Ω	0Ω	.1Ω	†2.5KΩ	†2.5KΩ	0Ω		
V 7	6AL5	.4Ω	120KΩ	.1Ω	0Ω	1.1KΩ	0Ω	3.9KΩ		
V 8	12AU7	†4.7KΩ	850KΩ	220Ω	.1Ω	.1Ω	†4.4KΩ	1 Meg	47Ω	0Ω
V 9	6AU6	1Ω	0Ω	0Ω	.1Ω	†2.5KΩ	†2.5KΩ	100Ω		
V 10	6AL5	15KΩ	15KΩ	2.2Ω	.1Ω	Inf.	0Ω	Inf.		
V 11	7N7	0Ω	0Ω	†15KΩ	1Meg	3.9Meg	†350Ω	6.8KΩ	.1Ω	
V 12	6SR7	0Ω	1.6Meg	0Ω	3.9Meg	3.9Meg	†1.9Meg	.1Ω	0Ω	
V 13	6S4	Inf.	■1KΩ	■2.2Meg	.1Ω	0Ω	■2.2Meg	Inf.	Inf.	†2KΩ
V 14	6SN7GT	■1.4Meg	†60KΩ	■410KΩ	■480KΩ	†80KΩ	■0Ω	.1Ω	0Ω	
V 15	6BG6G	Inf.	0Ω	■100Ω	Inf.	■1Meg	Inf.	.1Ω	†5KΩ	TOP CAP #70Ω
V 16	6W4GT	#170KΩ	Inf.	250KΩ	#22KΩ	†52Ω	Inf.	♦.1Ω	♦0Ω	
V 17	1B3GT	PINS 1 THROUGH 8 HAVE INF RESISTANCE								TOP CAP #460Ω
V 18	5U4G	Inf.	3.6KΩ	Inf.	■29Ω	Inf.	■28Ω	Inf.	3.6KΩ	
V 19	16KP4	♦0Ω	†4.7KΩ	PIN 10 #70KΩ	PIN 11 †200KΩ	PIN 12 ♦.1Ω				

ALL MEASUREMENTS TAKEN IN TV POSITION ONLY
ALL CONTROLS SET FOR NORMAL OPERATION - NO SIGNAL APPLIED
† MEASURED FROM PIN 2 OF V18
♦ MEASURED FROM 110VDC LINE
■ MEASURED FROM -105VDC LINE
MEASURED FROM PIN 3 OF V16



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

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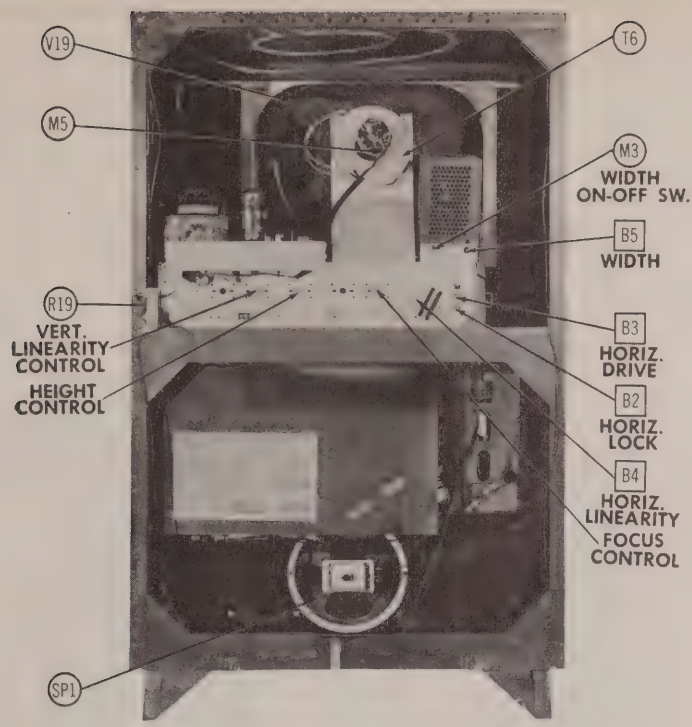

CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL OSCILLATOR ALIGNMENT

Turn the set on and tune in A TV station, preferably a test pattern.
Turn the horizontal hold control to the mid-position of its range.
Pre-set the lock trimmer, (B2), and the drive trimmer, (B4), two turns counter-clockwise from tight.
If necessary adjust the horizontal frequency slug, (B1), to synchronize the picture.
If there are bright vertical bars in the picture, adjust the horizontal drive trimmer, (B4), clockwise just enough to remove them. If the picture falls out of sync. during adjustment of B4 adjust B1 to synchronize the picture.
Turn the hold control to maximum clockwise.
Adjust the horizontal frequency slug, (B1), until the blanking bar begins to move into the picture from the left.
Turn the hold control to fully counter-clockwise. The picture should remain in sync.. However the picture will fall out of sync. after momentary removal of the signal.
When the hold control is turned to fully clockwise operation is satisfactory if the sync. condition is between a "shimmy" and 2½ sloping bars.
The picture should remain in sync. over 3/4 of the hold control range.
The horizontal phasing adjustment on opposite end of can from B1, has been properly adjusted at the factory and should not be adjusted in the field. If trouble is suspected in this adjustment the entire coil assembly including capacitor C60 should be returned to the factory as a defective part.

HORIZONTAL LINEARITY ADJUSTMENTS

Adjust the horizontal drive trimmer, (B3), for best compromise between maximum brightness and horizontal linearity. After each adjustment of B3, the horizontaloscillator alignment should be rechecked.
Adjust the horizontal linearity slug, (B4), for best linearity of the right side of the picture.
Adjust the width slug, (B5), until the picture is slightly wider than necessary to fill the mask horizontally. In some cases it may be necessary to remove the width coil from the circuit by means of the width switch to obtain sufficient width.

DISASSEMBLY INSTRUCTIONS

(TV)

1. Remove 7 push-on type control knobs from front panel.
2. Remove 8 wood screws from back cover. Remove cover.
3. Remove 2 wood screws from antenna strip.
4. Disconnect built-in antenna from antenna strip.
5. Disconnect audio cable from back of radio.
6. Remove chassis bolts. Remove chassis.
7. Disconnect speaker. Remove 4 nuts and remove speaker.

Note: For picture tube removal it is necessary to remove chassis as outlined above.

(RADIO)

1. Remove 4 push-on type control knobs from front panel.
2. Disconnect phono leads from back of radio.
3. Remove 3 metal screws from inside phono compartment. Remove chassis.

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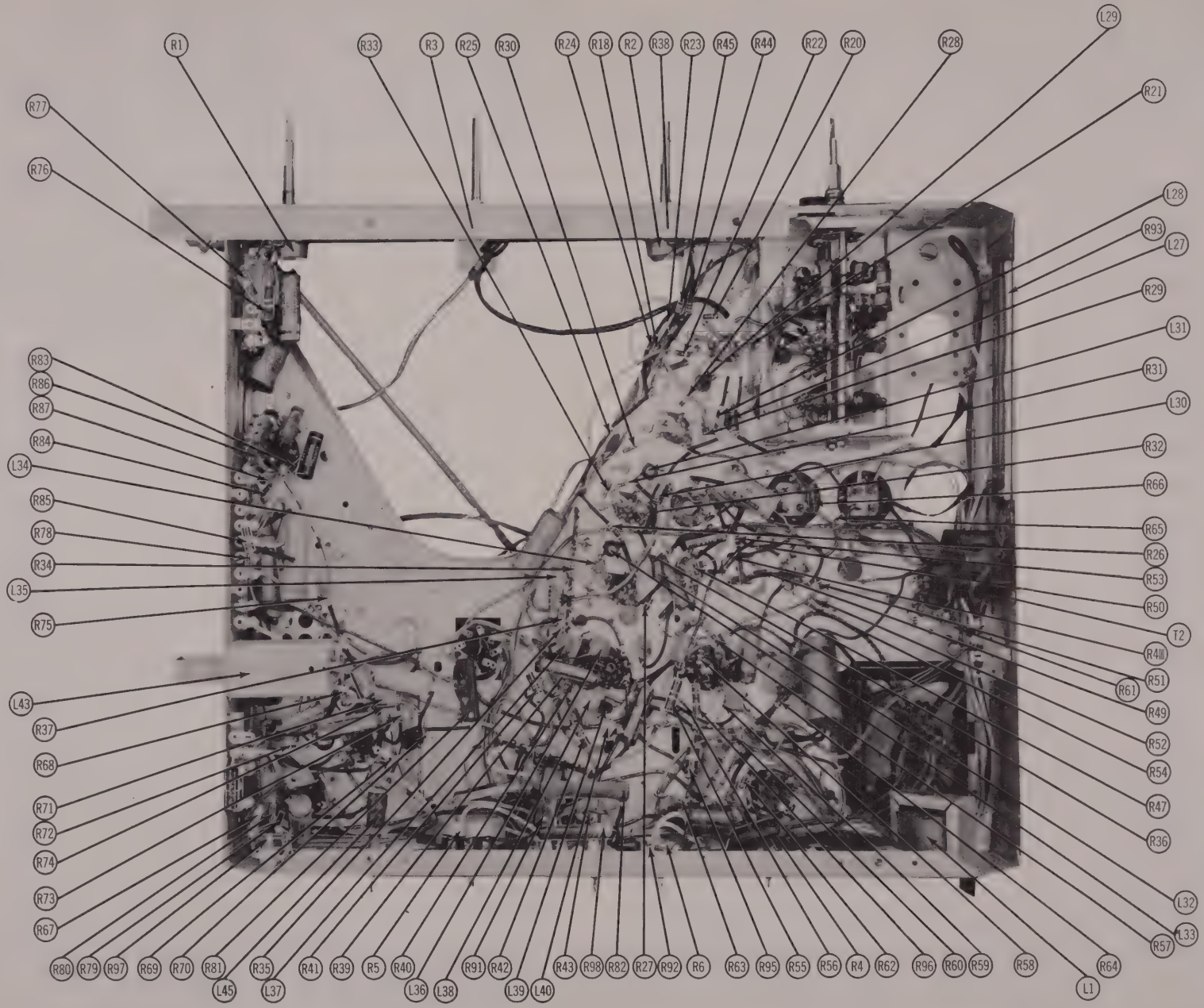

CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

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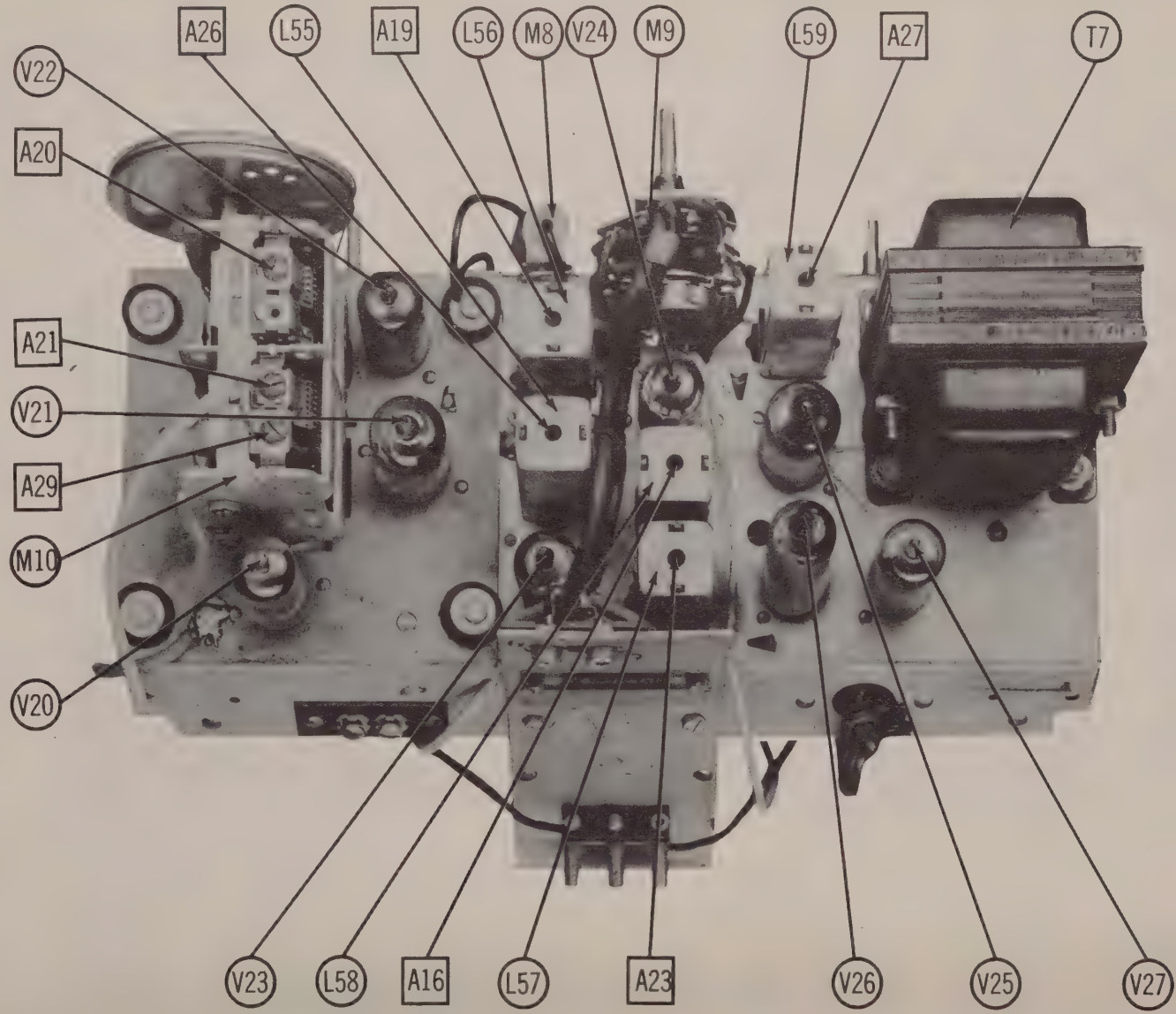
DENVER, COLORADO

RADIO CHASSIS-BOTTOM VIEW-CAPACITOR IDENTIFICATION



RADIO CHASSIS-TOP VIEW

TV PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6J6	6J6	7BF	
V2	Mixer	6AG5	6AG5	7BD	
V3	Osc.	6J6	6J6	7BF	
V4	1st. Video IF Amp.	6CB6	6CB6	7CM	
V5	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V6	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V7	Video Det.-AGC Rect.	6AL5	6AL5	6BT	
V8	1st.& 2nd. Video Amp.	12AU7	12AU7	9A	
V9	Sound IF Amp.	6AU6	6AU6	7BK	
V10	Ratio Det.	6AL5	6AL5	6BT	
V11A	Sync. Sep.	7N7	7N7	8AC	
B	Sync. Sep.	6SN7GT	6SN7GT	8BD	
V12A	Sync. Limiter Vert. Osc.	6SR7	6SR7	8Q	
B	Sync. Limiter Vert. Osc.	6BF6	6BF6	7BT	
V13	Vert. Amp.	6S4	6S4	9AC	
V14A	Horiz. AFC-Horiz. Osc.	6SN7GT	6SN7GT	8BD	
B	Horiz. AFC-Horiz. Osc.	7N7	7N7	8AC	
V15	Horiz. Output	6BG6G	6BG6G	5BT	
V16	Damper	6W4GT	6W4GT	4CG	
V17	HV Rect.	1B3GT	1B3GT	3C	
V18	LV Rect.	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: SILVERTONE PART No.	SYLVANIA PART No.	THOMAS PART No.	RTMA BASE TYPE	NOTES
V19A	16KP4	16KP4	16KP4	12D	① Use single-magnet Ion Trap Outer coating must be grounded
B	16TP4	16TP4	16KP4	12D	
C	16RP4	16RP4	16KP4	12D	
D	16XP4	16KP4 ①	16KP4 ①	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	60	450	TCE-147-D	AFH 4-123		UPT413		TVL-4811	■Filter
B	30	400							▲ Decoupling
C	10	475							▲ Vert.Osc.Dec.
D	125	50							Vert. Amp. Cathode
C2A	80	450	TCE-148-D	AFH 4-118		UPT412		TVL-4710	▲ Filter
B	30	300							▲ Decoupling
C	40	150							Bias Filter
D	10	400							■ Vert. Amp. Dec.
C3	4	25	TCE-104-D	PRS150/4		BR550		TVA-1203	Stabilizing Cap.
C4	220			SI220	D6-221		GP2K-221	5GA-T22	RF Amp.Plate Dec.
C5	500			SI500	D6-501		GP2K-501	5GA-T5	RF Amp. Grid Filter
C6	500			SI500	D6-501		GP2K-501	5GA-T5	RF Amp. Grid Filter
C7	220			SI220	D6-221		GP2K-221	5GA-T22	RF Amp. Fil.
C8	1			1468-000001	TCZ-1		NP0K-010		RF Coupling
C9	22				TCZ-22		NP0K-220		RF Coupling
C10	5000			BPD-005	DD-502		811-005	5HK-D5	Mixer Decoupling
C11	220			SI220	D6-221		GP2K-221	5GA-T22	Mixer Fil.
C12	.68				TCZ-.68		NP0K-R68		Osc. Coupling
C13	220			SI220	D6-221		GP2K-221	5GA-T22	Fixed Trimmer
C14	4.7						N750K-4R7		Osc. Feedback
C15	4.7						N750K-4R7		Osc. Feedback
C16	220			SI220	D6-221		GP2K-221	5GA-T22	Osc. Fil.
C17	220			SI220	D6-221		GP2K-221	5GA-T22	RF Bypass
C18	270	500		1468-0003	D6-271	5W5T3	GP2K-271	MS-33	IF Coupling
C19	1500		TCC-152-SP	SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	RF Bypass
C20	1500		TCC-152-SP	SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	AGC Filter
C21	1500		TCC-152-SP	SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	AGC Filter
C22	1500		TCC-152-SP	SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	1st. Video IF Dec.
C23	1500		TCC-152-SP	SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	AGC Filter
C24	1500		TCC-152-SP	SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	2nd. Video IF Dec.
C25	5000		TCC-502-SP	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C26	1500		TCC-152-SP	SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	3rd. Video IF Dec.
C27	5000		TCC-502-SP	BPD-005	DD-502	1D5D5	811-005	5HK-D5	3rd. Video IF Cathode
C28	100		TCSM-101-7	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	IF Coupling
C29	5000		TCC-502-SP	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AGC Cathode Bypass
C30	.25	200	TCP-254-1	P488-25		GT2P25		2TM-P25	AGC Filter
C31	5	500	TCC-050-8	1469-000005		5R5V5		MS-55	Video Det. Filter
C32	.047	200	TCPM-503-1	P288-047	DF-503	PTE4S5		2TM-S47	Video Coupling
C33	.047	400	TCPM-503-4	P488-047	DF-503	PTE4S5		4TM-S47	Video Coupling
C34	.0047	600	TCP-502-4	P688-0047	D6-502	PTE6D5	GP2-333-472	6TM-D47	Video Amp. Cathode
C35	68			SI68	D6-680	5R5Q7	GP1K-680	5GA-Q68	Fixed Trimmer
C36	.22	400	TCPM-254-4	P488-22		GT4P25		4TM-P22	Picture Tube Cathode
C37	2.2		TCC-2.2-7		TCZ-2.2		NP0K-2R2		Sound IF Coupling
C38	.01	400	TCP-103-4	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Sound IF Decoupling
C39	.02	200	TCP-203-1	P488-02	DF-203	PTE4S2		2TM-S2	Sound IF Cathode
C40A	2000		TCC-2-1	BPD-2X002	DD-3-202	1W5D2	812-002	5HK-2D2	Diode Load Cap.
B	2000					1W5D2			Diode Load Cap.
C41	1500		TCC-152-SP	SI1500	D6-152	1W5D15	GP2L-152	5HK-D15	De-emphasis
C42	.002	600	TCP-202-10	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Audio Coupling
C43	.01	400	TCP-103-4	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling *
C44	.047	400	TCPM-503-4	P488-047	DF-503	PTE4S5		4TM-S47	Sync. Coupling
C45	100	500	TCM-101-8	1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	Sync. Coupling
C46	390	500	TCM-391-7	1469-0004		5R5T4		MS-34	Sync. Sep. Cathode
C47	.002	600	TCPM-202-10	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Vert. Integrator Net.
C48	.005	600	TCPM-502-10	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Vert. Integrator Net.

TV PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C49	.0047	600	TCPM-503-11-SP	P688-0047	D6-472	DTE6D5	GP2-333-472	6TM-D47	Vert. Osc. Grid Cap.
C50	.01	600	TCPM-103-10	P688-01	D6-103	DTE6S1	GP2-333-103	6TM-S1	Vert. Hold Bypass
C51	.047	600	TCPM-503-10	P688-047	DF-503	DTE6S5		6TM-S47	Vert. Discharge
C52	.22	600	TCPM-254-10	684-25		GP6P25		6TM-P25	Vert. Sweep Coupling
C53	82	500	TCM-082-8						Horiz. Sync. Coupling
C54	82	500	TCM-082-8						Horiz. Feedback
C55	.047	600	TCPM-503-10	P688-047	DF-503	DTE6S5		6TM-S47	Horiz. AFC Plate
C56	.06	600		684-06				6TM-S6	Horiz. AFC Filter ‡
C57	.035	600		P688-033					Horiz. AFC Filter ‡
C58	.47	200	TCPM-474-1	P288-47		GT2P5		2TM-P47	Horiz. AFC Filter
C59	180	1000	TCPM-184-29						Horiz. Osc. Grid Cap.
C60	.01	600	TCPM-103-10-SP	P688-01	D6-103	DTE6S1	GP2-333-103	6TM-S1	Fixed Trimmer
C61	.001	1000	TCPM-102-14-SP	P1088-001		DTE16D1		MB-D1	Horiz. Discharge
C62	.22	600	TCPM-254-10	684-25		GP6P25		6TM-P25	Decoupling
C63	270	500	TCM-271-7	1468-0003	D6-271	5WST3	GP2K-271	M2-33	Horiz. Sweep Coupling
C64	.047	600	TCPM-503-11	P688-047	DF-503	DTE6S5		6TM-S47	Horiz. Output Screen
C65	.47	200	TCPM-474-1	P288-47		GT2P5		2TM-P47	Horiz. Output Cathode
C66	.001	1000	TCP-102-14	P1088-001		DTE16D1		MB-D1	Fixed Trimmer ♦
C67	.05	1000	TCP-503-13	P1088-05		GT16S5		MB-S5	Damper Filter
C68	.035	1000	TCP-353-13						Damper Filter
C69	.01	600	TCPM-103-10	P688-01	D6-103	DTE6S1	GP2-333-103	6TM-S1	RF Bypass
C70	.00033	12500	TCPM-331-SP						HV Filter
C71	.01	400	TCPM-103-4-SP	P488-01		DTE4S1		4TM-S1	Line Filter
C72	.01	400	TCPM-103-4-SP	P488-01		DTE4S1		4TM-S1	Line Filter
C73	90	1500							Horizontal Blanking *
C74	.002	500	TCPM-202-10	P688-002	D6-202	DTE6D2	GP2-333-202	6TM-D2	Horizontal Blanking

* Not used in all Models
† Some Models use 047 MFD in this application (Part No. TCPM-503-4)
¶ Some Models use 022MFD in this application (Part No. TCPM-203-4)
♦ Some Models use 05MFD in this application (Part No. TCP-102-14)

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Silvertone PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1.5Meg	½	TVC-523-D	"Concentrikit" B11-138 *	RTV-63	SBB-640	Vertical Hold Control
B	50KΩ			B11-123 *			Horizontal Hold Control
C	Shaft End			E187 *			Attach per instructions in Concentrikit
R2A	10KΩ	½	TVC-524-D	B17-117 *	RTV-62	SBB-641	Contrast Control
B	5KΩ			B11-133 *			Brightness Control
C	Shaft End			E187 *			Attach per instructions in Concentrikit
R3A	2.5Meg	½	TVC504-1-D	Q11-239	AG-84-S	AN-83	Height Control
B	Shaft			SQ	FKS-1/4	AK-1	Attach to R3A per instructions.
R4A	2400Ω	4	TVC-506-1-D		RTV-183	SVP-988	Focus Control- Wire Wound See note 1.
B	Shaft				Not Req.	Not Req.	Attach to R4A per instructions.
R5A	5KΩ	2	TVC-503-1-D	W-5000	43-5000	VK-135	Vertical Linearity Control- Wire Wound
B	Shaft			Not Req.	Not Req.	Not Req.	Attach to R5A per instructions.
R6A	500KΩ	½	TVC-520-D			B-61	Volume Control
B	Shaft					Not Req.	Attach to R6A per instructions.

Note 1. Focus control not used in models using PM focus magnet.

* Additional parts to be used in "Concentrikit"

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SILVERTONE PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 20% UNLESS OTHERWISE NOTED
R7	5.1Ω	5%	TRC-51A-2		Parasitic Suppressor
R8	1KΩ		TRC-102-1	BTS-1K	RF Amp. Plate
R9	1.8Meg	10%	TRC-185-1		RF Amp. Grid
R10	1.8Meg	10%	TRC-185-1		RF Amp. Grid Decoupling
R11	4.7KΩ	5%	TRC-472-3	BTS-4.7K 5%	Mixer Coil Shunt
R12	100KΩ		TRC-104-1		Mixer Grid
R13	1KΩ	10%	TRC-102-1	BTS-1K	Mixer Screen
R14	27KΩ	10%	TRC-273-1		Osc. Grid
R15	47Ω		TRC-470-1		Osc. Cathode
R16	27KΩ	10%	TRC-273-1	BTS-27K	Osc. Grid
R17	1KΩ		TRC-102-1	BTS-1K	Osc. Plate
R18	330Ω		TRC-331-1	BTS-330	Decoupling
R19	100Ω		TRC-101-1	BTS-100	Antenna Matching
R20	22KΩ	10%	TRC-223-2		1st. Video IF Amp. Grid
R21	47Ω		TRC-470-2		1st. Video IF Amp. Cathode
R22	1KΩ	10%	TRC-102-2	BTS-1K	1st. Video IF Amp. Decoupling
R23	330Ω		TRC-331-1	BTS-330	AGC Network
R24	330Ω		TRC-331-1	BTS-330	AGC Network
R25	330Ω		TRC-331-1	BTS-330	AGC Network
R26	560KΩ	10%	TRC-564-2		A GC Network
R27	120KΩ		TRC-124-1		AGC Network
R28	18KΩ	10%	TRC-183-2	BTS-18K	1st. Video IF Amp. Coil Shunt
R29	47Ω		TRC-470-2		2nd. Video IF Amp. Cathode
R30	1KΩ	10%	TRC-102-2	BTS-1K	2nd. Video IF Amp. Decoupling
R31	22KΩ	10%	TRC-223-2		2nd. Video IF Amp. Coil Shunt
R32	100Ω	10%	TRC-101-2	BTS-100	3rd. Video IF Amp. Cathode
R33	1KΩ		TRC-102-1	BTS-1K	3rd. Video IF Amp. Decoupling
R34	3.9KΩ	10%	TRC-392-2	BTS-3.9K	Video Detector Load
R35	3.9Meg	10%	TRC-395-1	BTS-3.9Meg	Voltage Divider
R36	1KΩ		TRC-102-1	BTS-1K	AGC Detector Cathode
R37	1Meg		TRC-105-1	BTS-1Meg	Video Amp. Grid
R38	10KΩ		TRC-103-1	BTS-10K	Contrast Control Shunt
R39	47Ω		TRC-470-1		Video Amp. Cathode
R40	1Meg		TRC-105-1	BTS-1Meg	Video Amp. Grid
R41	3.3KΩ	10%	TRC-332-5	BTA-3.3K	Video Amp. Plate
R42	3.3KΩ	10%	TRC-332-5	BTA-3.3K	Video Amp. Plate
R43	820Ω	5%	TRC-821-2	BTS-820 5%	Video Amp. Plate
R44	47KΩ		TRC-473-1	BTS-47K	Voltage Divider
R45	100KΩ		TRC-104-1	BTS-100K	Picture Tube Cathode
R46	15KΩ		TRC-153-2		Sound IF Amp. Grid
R47	100Ω		TRC-101-1	BTS-100	Sound IF Amp. Cathode See note 1.

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SILVERTONE PART No.	IRC PART No.	IDENTIFICATION CODES
R48	1KΩ		TRC-102-1	BTS-1K	Sound IF Amp. Decoupling
R49	150Ω		TRC-221-1	BTS-150	Balancing See Note 2.
R50	150Ω		TRC-221-1	BTS-150	Balancing See note 3.
R51	15KΩ	10%	TRC-153-2	BTS-15K	Ratio Detector Load
R52	15KΩ	10%	TRC-153-2	BTS-15K	Ratio Detector Load
R53	47KΩ		TRC-473-1		De-emphasis
R54	5.1Ω	5%	TRC-51A-1		Filament Dropping
R55	15KΩ	10%	TRC-153-5	BTA-15K	Sync. Separator Plate
R56	1Meg		TRC-105-1	BTS-1Meg	Sync. Separator Grid
R57	6.8KΩ	10%	TRC-682-2	BTS-6.8K	Sync. Separator Cathode
R58	3.9Meg	10%	TRC-395-2	BTS-3.9Meg	Sync. Limiter Plate
R59	22KΩ		TRC-223-2	BTS-22K	Integrator Network
R60	8000Ω	10%	TRC-822-2	BTS-8200	Integrator Network See note 4.
R61	1Meg		TRC-105-1	BTS-1Meg	Vertical Osc. Grid
R62	4.6KΩ	5%		BTS-4.6K 5%	Vert. Peaking See note 9.
R63	470KΩ		TRC-474-1	BTS-470K	Vert. Osc. Plate
R64	2.2Meg	10%	TRC-225-2	BTS-2.2Meg	Vertical Amp. Grid
R65	820Ω	10%	TRC-821-2	BTS-820	Vertical Amp. Cathode
R66	1KΩ		TRC-102-1	BTS-1K	Decoupling
R67	150KΩ	10%	TRC-154-2	BTS-150K	AFC Feedback
R68	1000Ω		TRC-822-3	BTS-1000	Horizontal Osc. Coil Shunt See note 5.
R69	330KΩ	10%	TRC-334-2	BTS-330K	AFC Grid
R70	820KΩ	10%	TRC-824-2	BTS-820K	AFC Grid
R71	82KΩ	5%	TRC-823-6	BTA-82K 5%	AFC Cathode
R72	3.9KΩ	10%	TRC-392-3	BTS-3.9K	AFC Filter
R73	330K	5%	TRC-334-6	BTA-330K 5%	Horizontal Osc. Grid
R74	150KΩ	5%	TRC-154-6	BTA-150K 5%	Horizontal Osc. Grid
R75	82KΩ	5%	TRC-823-6	BTA-82K	Horizontal Osc. Plate
R76	100K	10%	TRC-104-5	BTA-100K	Voltage Divider
R77	82KΩ	10%	TRC-823-5	BTA-82K	Voltage Divider
R78	10KΩ	10%	TRC-103-2	BTS-10K	Horizontal Osc. Decoupling
R79	47Ω		TRC-470-1		Parasitic Suppressor
R80	1Meg	10%	TRC-105-2	BTS-1Meg	Horizontal Output Grid
R81	100Ω	10%	TRC-101-8	BW-2-100	Horizontal Output Cathode
R82	4.7KΩ	10%	TRW-472-7	BTB-4.7K	Horizontal Output Screen
R83	22KΩ		TRC-223-1	BTS-22K	Filter Network
R84	120KΩ		TRC-124-1	BTS-120K	Filter Network
R85	120KΩ	10%	TRC-124-1	BTS-120K	Voltage Divider
R86	100KΩ		TRC-104-7	BTS-100K	Voltage Divider
R87	47KΩ		TRC-223-1		Filament Dropping
R88	3.3Ω		TRC-33A-1		HV Filter - Wire Wound
R89	1Meg		TRC-105-7	BTS-1Meg	Filter - Wire Wound
R90	250Ω	10%	TRW-251-SP		Filter - Wire Wound
R91	18Ω	10%	TRC-180-8		Bleeder - Wire Wound - See Note 7
R92	12KΩ		TRP-5		Bleeder - Wire Wound - See Note 8
R93	12KΩ		TRP-5		Voltage Divider
R94A	1125Ω		TRP-17-DA		Bleeder Wire Wound
B	8200Ω				Bias Network
C	650Ω				Bias Network
R95	82Ω	10%	TRC-820-8		Bias Network
R96	33Ω	10%			Horiz. AFC Filter Network
R97	15K	10%		BTB-15K	Focus Coil Shunt See note 10.
R98	330Ω			BTB-330	

Note 1 Some Models use a 180Ω Resistor in this application
Note 2 Some Models use a 220Ω Resistor in this application
Note 3 Some Models use a 220Ω Resistor in this application
Note 4 Some Models use a 8200Ω Resistor in this application
Note 5 Some Models use a 8.2KΩ Resistor in this application
Note 6 Some Models use a 2.2KΩ Resistor in this application
Note 7 Some Models use a 5500Ω Resistor in this application
Note 8 Not used in Models when R92 is a 5500Ω.
Note 9 Some Models use a 5.6K Resistor in this application
Note 10. Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA Silvertone PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 2.0A	720VCT .255ADC	5VAC @3.0A	6.3VAC @7.0A Sec. 4 6.3VAC @ 1.8A	TTR-188-D		P-3059	TP-380

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA Silvertone PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	145Ω	1360Ω	TTR-161-2-D	A-8111	A-3000	TBO-1 ③	Vert. Oscillator Trans.
T3	430Ω Tapped @ 42Ω	18Ω Tapped @ 9Ω & 13.4Ω Sec. 2 0Ω	TTR-209-D	A-8130	HVO-7		Horiz. Output Trans.
T4	1100Ω	10Ω	TTR-185-D	A-8112	A-3036	TSO-5	Vert. Output Trans.
T5A	14Ω		TTR-201-D	DY-8	MDF-70		Horiz. Deflection Coils
B	62Ω		TLF-521-D ④				Vert. Deflection Coils
T6	470Ω			FC-11	MF-2		Focus Coil

③ Mount on top of chassis
④ Not used in all models.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA Silvertone PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.255ADC	37Ω	1HY	TTR-106-2-D	C-2326 ⑤	C-2991 ⑤	TR-3300 ⑤	⑤ Drill one new mounting hole

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA SILVERTONE PART No.	MERIT PART No.	NOTES
L2	Ant. Trans.	0Ω		TLF-565-D		
L3	RF Coil	0Ω		TLF-128-D		Channel 2
L4	RF Coil	0Ω		TLF-129-D		Channel 3
L5	RF Coil	0Ω		TLF-126-D		Channel 4
L6	RF Coil	0Ω		TLF-130-D		Channel 5
L7	RF Coil	0Ω		TLF-143-D		Channel 6
L8	RF Coil	0Ω		TLF-138-D		Channel 13 Not used in all Models
L9	Mixer Grid	0Ω		TLF-128-D		Channel 2
L10	Mixer Grid	0Ω		TLF-129-D		Channel 3
L11	Mixer Grid	0Ω		TLF-129-D		Channel 4
L12	Mixer Grid	0Ω		TLF-130-D		Channel 5
L13	Mixer Grid	0Ω		TLF-143-D		Channel 6
L14	Mixer Grid	0Ω		TLF-138-D		Channel 13
L15	Osc. Coil	0Ω		TLF-120-1		Channel 2
L16	Osc. Coil	0Ω		TLF-120-3		Channel 3 & 4
L17	Incremental coil	0Ω		TLF-542-D		Channel 3
L18	Incremental coil	0Ω		TLF-542-D		Channel 3
L19	Osc. Coil	0Ω		TLF-120-5		Channel 5 & 6
L20	Incremental coil	0Ω		TLF-541-D		Channel 5
L21	Osc. Coil	0Ω		TLF-120-8		Channels 7 & 8
L22	Osc. Coil	0Ω		TLF-120-9		Channels 9 & 10
L23	Osc. Coil	0Ω		TLF-120-10		Channels 11 & 12
L24	Osc. Coil	0Ω		TLF-120-10		Channel 13
L25	RF Choke	0Ω		TLF-146-D		
L26	1st. Video IF	.6Ω		TLF-551-D		
L27	Fil. Choke	0Ω		TLF-520-D		
L28	Fil. Choke	0Ω		TLF-520-D		
L29	2nd. Video IF	.2Ω	.2Ω	TLF-567-D		
L30	Fil. Choke	0Ω		TLF-520-D		
L31	3rd. Video IF	.4Ω	.4Ω	TLF-568-D		
L32	Fil. Choke	0Ω		TLF-520-D		
L33	4th. Video IF	.4Ω	.4Ω	TLF-567-1-D		
L34	Peaking Coil	2.6Ω		TLF-146-D		15 Microhenries
L35	Peaking Coil	6Ω		TLF-135-D		180 Microhenries, Green Dot, Wound on 22KΩ Resistor
L36	Peaking Coil	6Ω		TLF-135-D		180 Microhenries, Green Dot, Wound on 22KΩ Resistor
L37	Peaking Coil	6Ω		TLF-135-D		180 Microhenries, Green Dot, Wound on 22KΩ Resistor
L38	Peaking Coil	9.8Ω		TLF-562-D		350 Microhenries, Orange Dot
L39	4.5MC Trap	1Ω		TLF-570-D		
L40	Peaking Coil	4.8Ω		TLF-502-D		120 Microhenries, Blue Dot, Wound on 22KΩ Resistor
L41	Sound IF	.8Ω		TLF-114-D		
L42	Ratio Det. Trans.	5.5Ω	1.8Ω	TLF-531-D		Tap at 1.5Ω
L43	Horiz. Osc.	60Ω	45Ω	TLF-566-D		Pri.Tap 16Ω
L44	Width Coil	29Ω		TLF-553-D	MWC-1	
L45	Horiz. Lin.	25Ω		TLF-506-DA		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA Silvertone PART No. FUSE	Silvertone PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	REMARKS
M1	3AG Pigtail	1/4A	TFU-1		318.250		

MISCELLANEOUS

ITEM No.	PART NAME	Silvertone PART No.	NOTES
M2	RF Tuner		
M3	Switch	TSW-201	Width
M4	Focus Magnet	TPM-101-DA	Not used in all models.
M5A	Ion Trap	TLF-554-D	Single
B	Ion Trap	TLF-546	Double
B2, B3	Trimmer	TAS-541-D	(Dual) Horizontal Drive and Horizontal Lock
	Knob	TKN-117-D	Channel Selector
	Knob	TKN-116-D	Volume
	Knob	TKN-115-D	Horiz. Hold, Brightness & Fine Tuning
	Knob	TKN-114-D	Vert. Hold & Contrast

PROPERTY OF
PARKINSHIP
2024 MEADE ST.
DENVER, COLORADO

SILVERTONE MODEL 144
(Ch. 478.312 & Radio Ch. 478.240)

RADIO PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V20	FM RF Amp.	6BJ6	6BJ6	7CM	
V21	FM Converter	12AT7	12AT7	9A	
V22	AM Converter	6BE6	6BE6	7CH	
V23	FM AM IF Amp.	6BJ6	6BJ6	7CM	
V24	FM IF Amp.	6BA6	6BA6	7BK	
V25	Det. AVC AF Amp. Ratio Det.	6T8	6T8	9E	
V26	Audio Output	6AS5	6AS5	7CV	
V27	Rect.	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C75A	20	200	CC-22	AFH4-51		UPT42235-C		TVL-4470	Filter (Blue)
B	40	200							Filter (Green)
C	20	200							Decoupling (Red)
D	10	25							Output Cathode (Yellow)
C76	4	50	CC-19	PRSI50/4		BR550		TVA-1303	Stabilizing Cap
C77	47		CC-47-7	SI47	D6-470	5W5Q5	GP1K-470	5GA-Q47	FM RF Coupling
C78	5000		CC-1-1	BPD-005	DD-502	1D5D5	811-005	5HK-D5	FM AVC Filter
C79A	1500			BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	FM RF Amp. Dec.
B	1500		CC-3-0	BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	FM RF Amp. Cathode
C	1500			BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	FM RF Amp. Fil.
C80	100		CC-101-7	SI100	D6-101	5W5T1	GP1K-101	5GA-T1	FM RF Coupling
C81A	2000		CC-2-1	BPD-2X002	DD-3-202	1W5D2	812-002	5HK-2D2	FM Mixer Cathode
B	2000					1W5D2			FM Osc. Plate
C82	47		CC-47-7	SI47	D6-470	5W5Q5	GP1K-470	5GA-Q47	FM Osc. Grid Cap.
C83	1		CSP-1	1468-000001	TCZ-1		NP0K-010		FM Osc. Coupling
C84	33	500	CMS-033-9	SI33NP0	TCZ-33		NP0L-330	5TCC-Q33	Fixed Trimmer
C85	1000	500	CM-102	1468-001	D6-102	1W5D1	GP2L-102	1FM-21	FM Mixer Plate Dec.
C86	5000		CC-1-1	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AVC Filter
C87A	4000		CC-2-2	BPD-2X004	D6-402	1D5D4	812-004	5HK-2D4	1st IF Amp. Dec.
B	4000				D6-402	1D5D4			1st IF Amp. Fil.
C88	.05	400	CP-503-1	P488-05	DF-503	PTE4S5		4TM-S5	1st IF Amp. Dec.
C89	5000		CC-1-1	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd FM IF Amp. Dec.
C90A	2000		CC-2-1	BPD-2X002	DD-3-202	1W5D2	812-002	5HK-2D2	2nd FM IF Amp. Cathode
B	2000					1W5D2			2nd FM IF Amp. Fil.
C91A	2000		CC-2-1	BPD-2X002	DD-3-202	1W5D2	812-002	5HK-2D2	Ratio Det. Fil.
B	2000					1W5D2			RF Bypass
C92	3.3		CC-3-11	SI3.3NP0	TCZ-3.3		NP0K-3R3		Balancing Cap.
C93	330	500	CM-331-8	1468-00035	D6-331		GP2K-331	1FM-335	Diode Load Cap.
C94	.002	600	CP-202-2	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	De-emphasis
C95	150	500	CM-151-1	1468-00015	D6-150	5W5T15	GP2K-151	1FM-315	Diode RF Filter
C96	68	500	CM-068-7	1469-00007	D6-680	5W5Q7	GP1K-680	MS-47	Diode RF Filter
C97	.05	400	CP-503-1	P488-05	DF-503	PTE4S5		4TM-S5	AVC Filter
C98	.002	400	CP-202-2	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Audio Coupling
C99	.003	600	CP-302-2	P688-003	D6-302	PTE6D3	GP2-333-302	6TM-D3	AF Amp. Plate
C100	.01	400	CP-103-1	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C101	.02	800	CP-203-20	P688-02		PTE6S2		6TM-S2	Audio Output Plate
C102	.01	400		P488-01		PTE4S1		4TM-S1	Line Filter †
C103	10000	500		1467-01		1D3S1		1FM-11	Line Filter †
C104	10	500		1469-00001		5R5Q1		MS-41	Fixed Trimmer *

† Some models use .02 MFD in this application. (Part No. CPM-203-1)
* Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Silvertone PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R124A	Switch		VC-17			AM-FM - Panel
B	1Meg	½				Volume Control & On-Off Switch - Rear

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Silvertone PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 20% UNLESS OTHERWISE NOTED
R99	1KΩ	½	RC-102-1	BTS-1K	FM Antenna Shunt
R100	100KΩ	½	RC-104-1	BTS-100K	AVC Network
R101	68Ω 10%	½	RC-680-2		FM RF Amp. Cathode
R102	1KΩ	½	RC-102-1	BTS-1K	FM RF Amp. Decoupling
R103	2200Ω 10%	½	RC-222-2	BTS-2200	FM Mixer Cathode
R104	10KΩ 10%	½	RC-103-2		FM Osc. Grid
R105	1KΩ	½	RC-102-1	BTS-1K	FM Osc. Plate
R106	22KΩ	½	RC-223-1		AM Mixer Grid
R107	1KΩ	½	RC-102-1	BTS-1KΩ	FM Mixer Decoupling
R108	68Ω 10%	½	RC-680-2		FM AM IF Amp. Cathode
R109	68Ω 10%	½	RC-680-2		FM IF Amp. Cathode
R110	1KΩ	½	RC-102-1	BTS-1KΩ	FM IF Amp. Decoupling
R111	39KΩ 10%	½	RC-393-2		De-emphasis
R112	10Meg	½	RC-106-1	BTS-10Meg	AF Amp. Grid
R113	100KΩ	½	RC-104-1	BTS-100K	Diode Filter
R114	1KΩ	½	RC-102-1	BTS-1K	AVC Network
R115	220KΩ	½	RC-224-1	BTS-220K	AVC Network
R116	27KΩ 5%	½	RC-273-3	BTS-27K 5%	Ratio Det. Diode Load
R117	1.8Meg	½	RC-225-1	BTS-1.8Meg	AVC Network See note 1.
R118	100Ω 10%	2	RW-101-8	BW-2-100	Filter Wire Wound
R119	100Ω 10%	1	RW-101-8	BW-2-100	Surge Limiter - Wire Wound
R120	180Ω 10%	½	RC-181-2	BTS-180	Output Cathode
R121	470Ω 10%	2	RW-471-8	BTB-470	Voltage Divider
R122	220KΩ	½	RC-224-1	BTS-220K	AF Amp. Plate
R123	470KΩ 10%	½	RC-474-1	BTS-470K	Output Grid

Note 1. Some models use a 2.2Meg resistor in this application.

RADIO PARTS LIST AND DESCRIPTIONS (Continued)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T7	117VAC ① .40A	320VCT .075ADC	6.3VAC ② 3.2A		TR-21			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		Silvertone PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T8	5KΩ	3.6Ω	390Ω	.4Ω	TTR-179-D	A-3877	A-2930	RO-8	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	Silvertone PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	P.M.	3.6Ω	TSP-80	ST-115 Mod. P8-V	8A21	
	CONE DIA.	V. C. DIA.				
SP1B	7½ in.	9/16in.				

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	SILVERTONE PART No.	MERIT PART No.	
L46	RF Choke	.1Ω		LC-15		
L47	RF Choke	1.9Ω		LC-14		
L48	FM RF Coil	0Ω		LC-12		
L49	Cath. Choke	2.4Ω		LC-16		
L50	Fil. Choke	.2Ω		LC-13		
L51	Fil. Choke	.2Ω		LC-13		
L52	FM Osc. Coil	0Ω		LC-11		
L53	AM Loop Ant.	.2Ω	3.6Ω	LP-21		
L54	AMOsc. Coil	.6Ω	6Ω	LC-9		
L55	1st. FM IF	.6Ω	.6Ω	LF-30		
L56	1st. AM IF	15Ω	15Ω	LF-32		
L57	2nd. FM IF	.6Ω	.6Ω	LF-34		
L58	2nd. AM IF	11Ω	11Ω	LF-35		
L59	Ratio Det. Trans.	1.6Ω	1Ω	LF-33		Tap at .8Ω

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA							REMARKS
	Silvertone PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M6	GC-AGM	GC-AC-J	G-AG	WC36B	A56U	43	0-2 or S-2	

ASTATIC, SHURF, AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

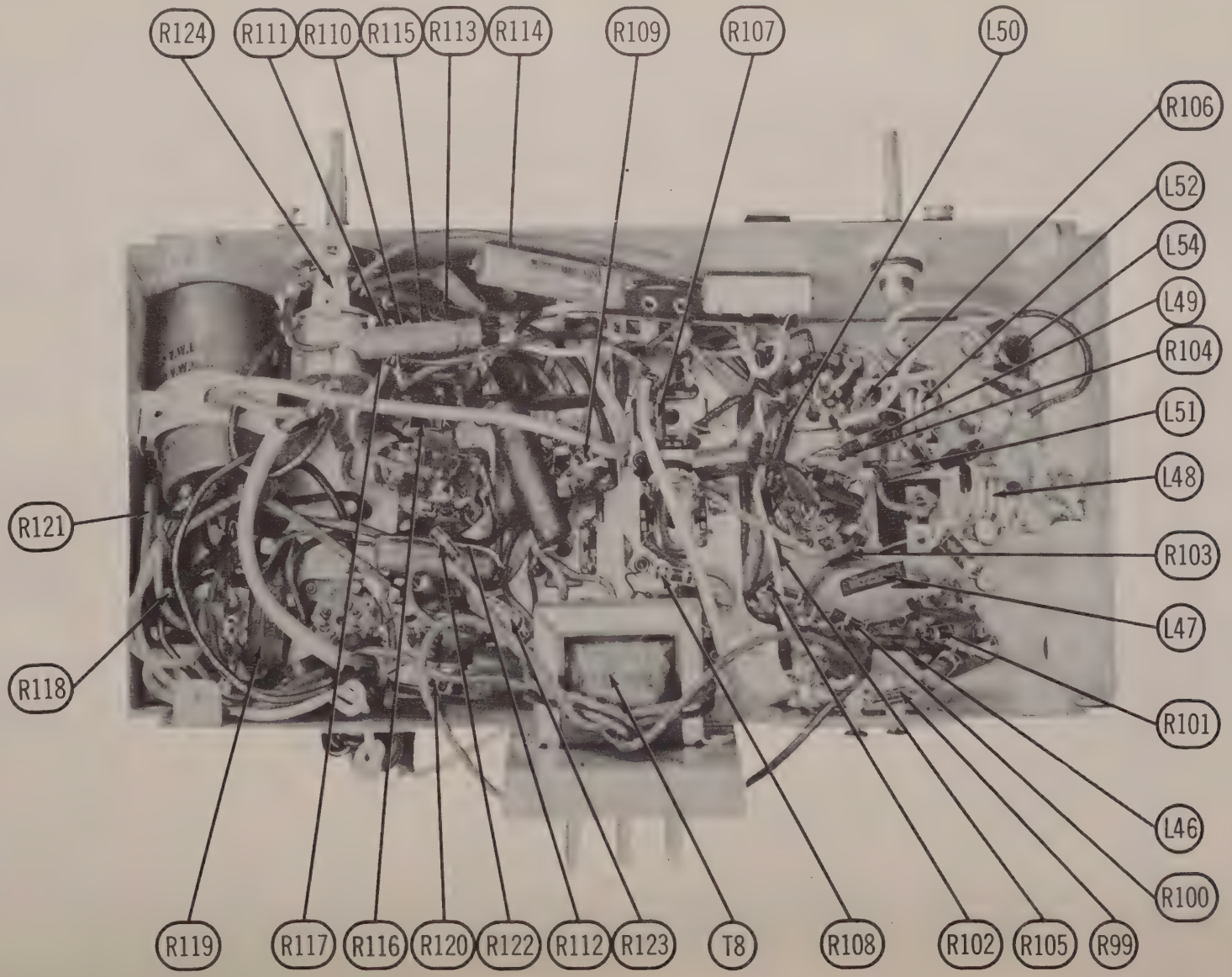
ITEM No.	REPLACEMENT DATA			REMARKS
	SILVERTONE PART No.	WALCO PART No.	JENSEN PART No.	
M7		W-3AGA or W-3AGS	A-842 or A-742	

DIAL LIGHTS

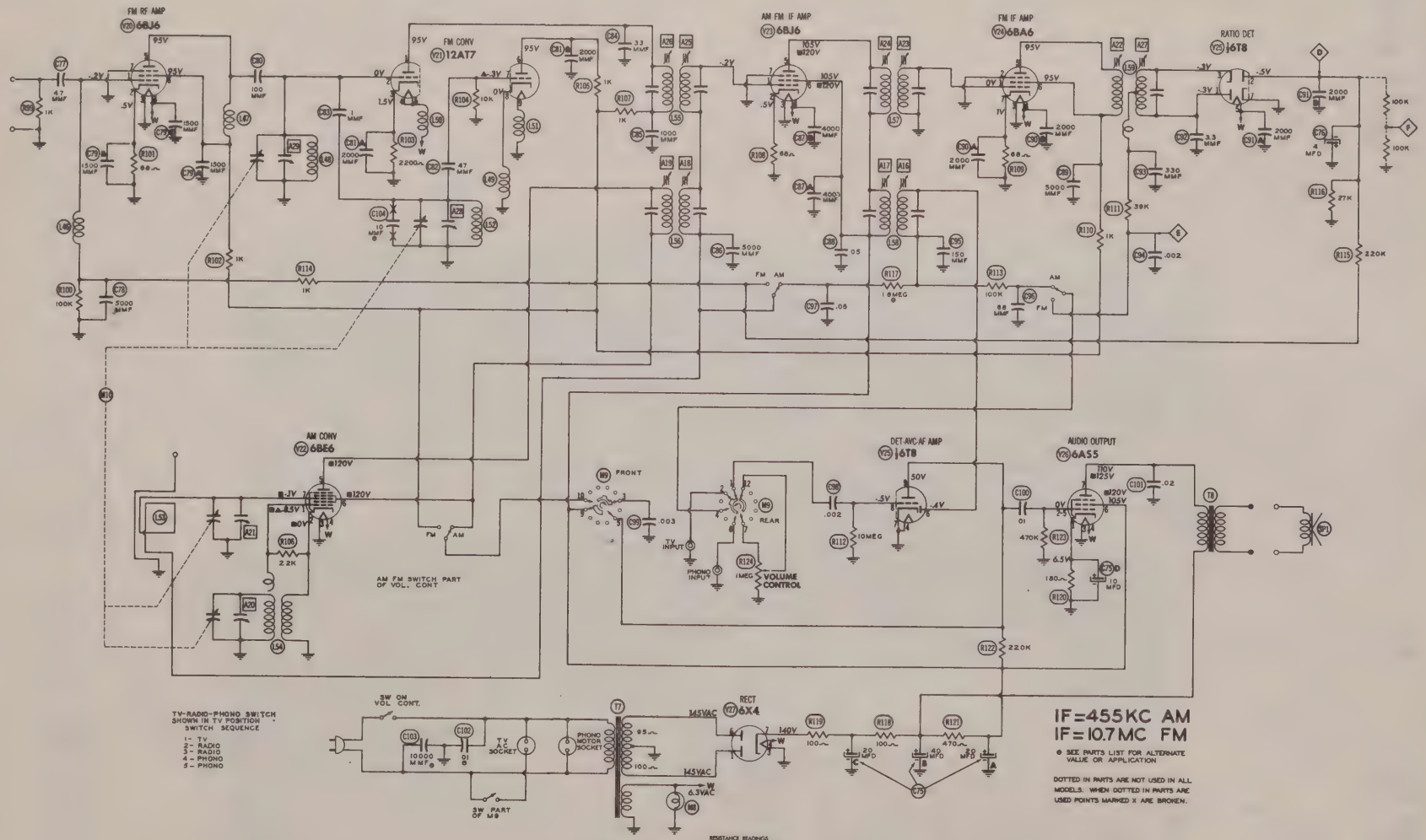
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					Silvertone PART No.		
M8	Bayonet	6.8	.15	Brown	BU-47		Type #47

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M9	Switch	TSW-208-D1	TV-Radio-Phono & Tone
M10	Tuning Cap	CV-17	(21-387MMF, 24-165MMF)
A28	Trimmer	TA-3	FM Osc.
	Knob	KN-35-1	TV-Radio-Phono & Tone
	Knob	KN-28-1	Tuning
	Knob	KN-27-1	Off/On Volume
	Knob	KN-26-1	AM-FM



RADIO CHASSIS-BOTTOM VIEW-RESISTOR IDENTIFICATION



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 20	6BJ6	100KΩ	68Ω	0Ω	.1Ω	†1.7KΩ	†1.7KΩ	0Ω		
V 21	12AT7	†1.7KΩ	0Ω	2.2KΩ	.2Ω	.2Ω	†1.7KΩ	10KΩ	2.5Ω	.1Ω
V 22	6BE6	22KΩ	.6Ω	0Ω	.1Ω	∞†670Ω	∞†670Ω	∞2.9Meg		
V 23	6BJ6	70KΩ ∞2.9Meg	68Ω	0Ω	.1Ω	†670Ω	†670Ω	∞		
V 24	6BA6	.8Ω	0Ω	0Ω	.1Ω	†1.7KΩ	†1.7KΩ	68Ω		
V 25	6T8	1Meg min.	27KΩ	1Meg min.	0Ω	.1Ω	Inf min. 1Meg	0Ω	10Meg	†220KΩ
V 26	6AS5	180Ω	470KΩ	0Ω	.1Ω	470KΩ	†670Ω	13300Ω		
V 27	6X4	160Ω	Inf.	0Ω	.1Ω	Inf.	86Ω	160KΩ		

ALL MEASUREMENTS TAKEN IN FM POSITION UNLESS NOTED
∞ MEASURED IN AM POSITION
† MEASURED FROM PIN 7 OF V 27

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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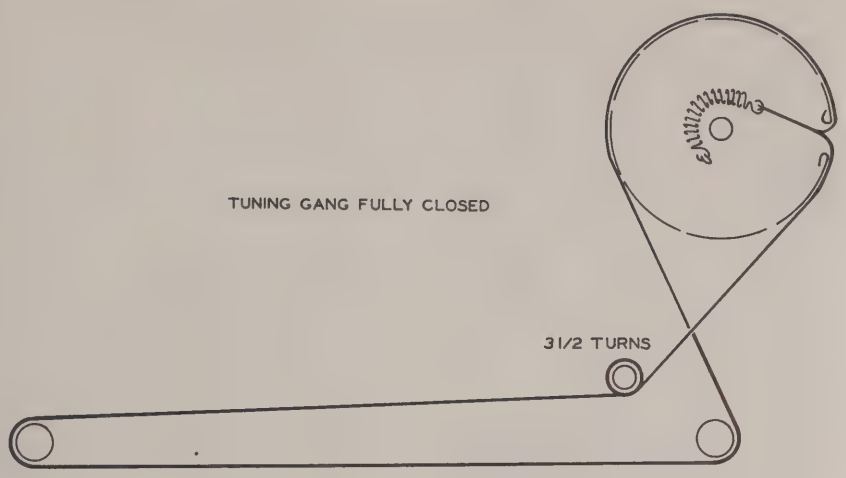
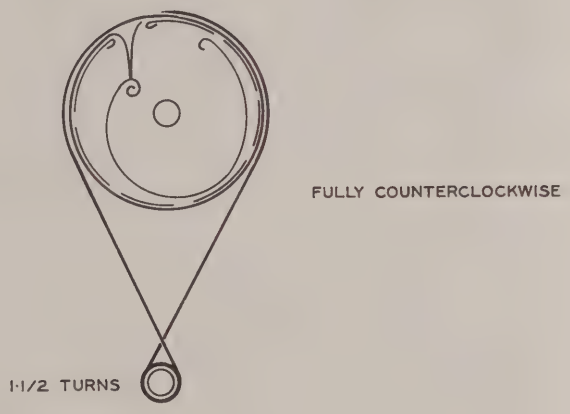
SILVERTONE MODEL 144
(Ch. 478.312 & Radio Ch. 478.240)

RADIO SCHEMATIC

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



DIAL CORD STRINGING

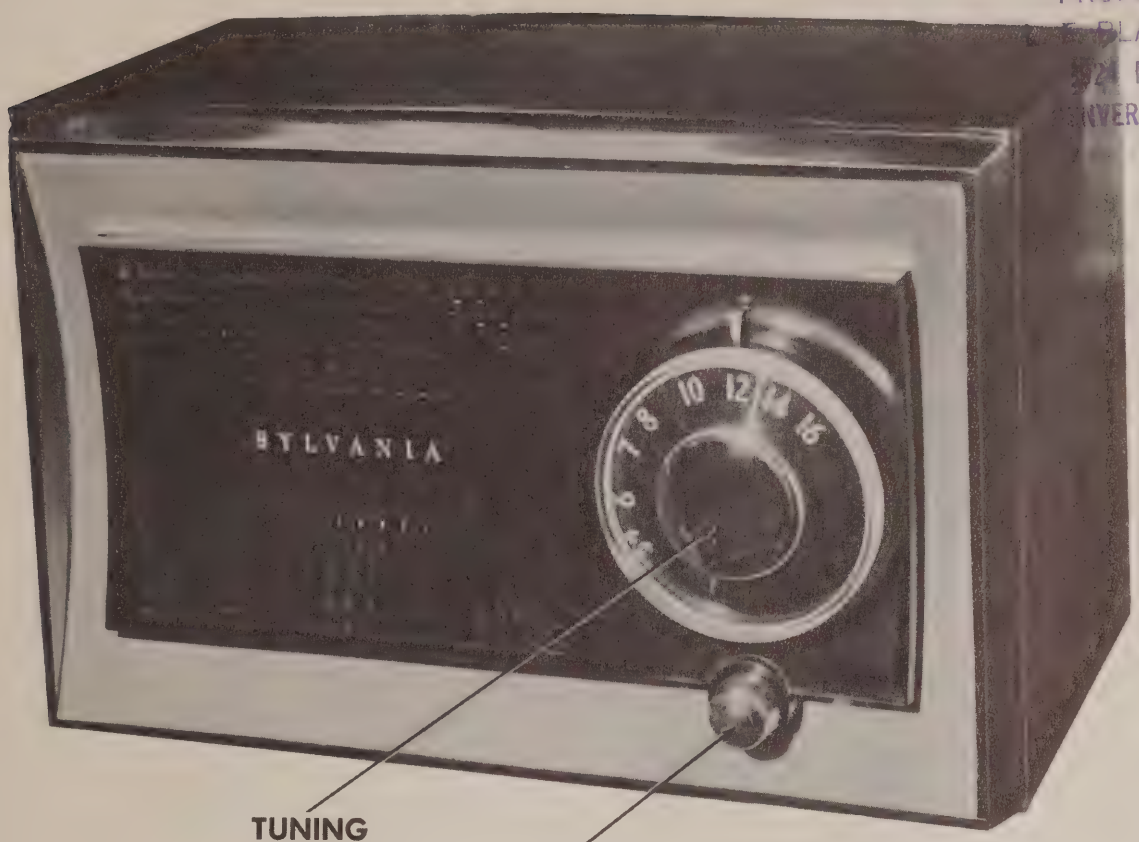


FINE TUNING DRIVE CORD STRINGING

SYLVANIA MODELS 511B, H, M, 512BR, CH, GR, RE, YE, (Ch. 1-601-1)

PROPERTY OF
[illegible] BLANKENSHIP
[illegible] MEADE ST.
[illegible]VER, COLORADO

SYLVANIA MODELS 511B, H, M, 512BR, CH, GR, RE, YE, (Ch. 1-601-1)



SYLVANIA MODELS 511B, H, M, 512BR, CH, GR, RE, YE, (Ch. 1-601-1)

SYLVANIA MODEL 511B

TRADE NAME	Sylvania Models 511B, H, M, 512BR, CH, GR, RE, YE (Ch. 1-601-1)
MANUFACTURER	Sylvania Electric. Prod., Inc. Colonial Radio & Tel. Div., 254 Rano St. Buffalo, N.Y.
TYPE SET	AC-DC Operated Superheterodyne Receiver With Loop Antenna
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp. 50C5 Audio Output, 35W4 Rectifier.
POWER SUPPLY	105-125 Volts AC/DC
RATING	.25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator on rear section of tuning gang. Low side to B-.	455KC (400% mod)	Tuning gang fully open.	Across voice coil.	A1, A2. A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1650KC	"	"	A5	"
3.		Loop	1450KC	Tune for maximum output.		A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		SYLVANIA PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp.	12AT6	12AT6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	SYLVANIA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	150	161-2002	PRS150/40-40		BRD4415A		TVA-2445	Filter
B	40	150							Filter
C2	100		166-0100P	SI100NP0	TCZ-100		NP0-333-101	5TCC-T1	Osc. Coupling
C3	.01	400	162-0411M	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Fixed Padder
C4	.047	200	162-04147	P288-047	DF-503	PTE4S5		2TM-S47	AVC Filter
C5	.01	400	162-0411M	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	AVC Filter
C6	.0047	600	162-06247	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Audio Coupling
C7	.0047	600	162-06247	P688-0047	D6-472	PTE6D5	GP2-333-472	6TM-D47	Audio Coupling
C8	.022	400	162-04122	P488-022	DF-203	PTE4S2		4TM-S22	Audio Output Plate
C9	.047	400	162-04147	P488-047	DF-503	PTE4S5		4TM-S47	Line Filter
C10	.047	400	162-04147	P488-047	DF-503	PTE4S5		4TM-S47	Line Isolation

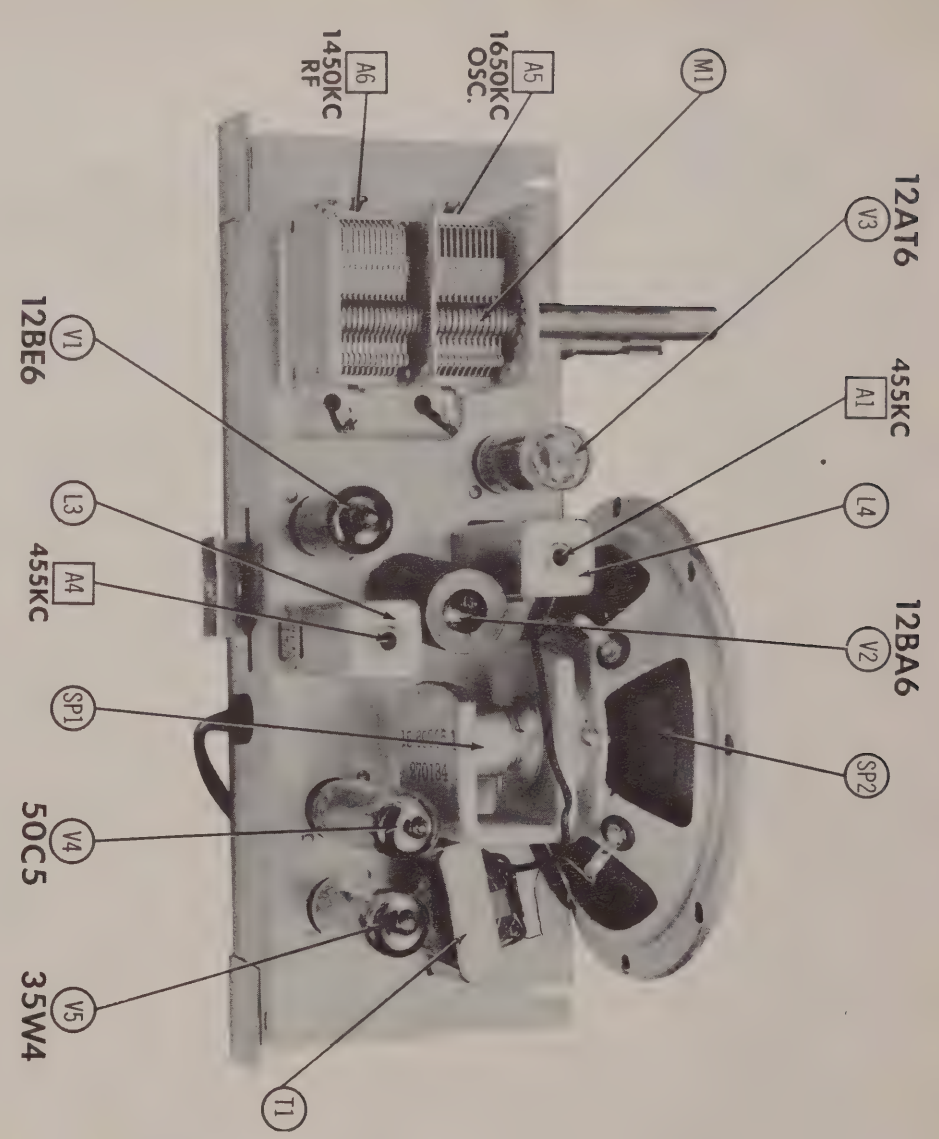
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	SYLVANIA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	500K	½	152-0012	Q13-133	AG-60-Z	BSK-60-S	Volume Control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	SYLVANIA PART No.	IRC PART No.	
R2	22KΩ	½	181-0223	BTS-22K	Osc. Grid
R3	100KΩ	½	181-0104	BTS-100K	AVC Network
R4	2.2Meg	½	181-0225	BTS-2.2Meg	AVC Network
R5	47KΩ	½	181-0473	BTS-47K	Diode Filter
R6	10Meg	½	181-0106	BTS-10Meg	AF Amp. Grid
R7	47KΩ	½	181-0473	BTS-47K	AF Amp. Plate
R8	470KΩ	½	181-0474	BTS-470K	AF Amp. Plate
R9	470KΩ	½	181-0474	BTS-470K	Output Grid
R10	150Ω	½	181-0151	BTS-150	Output Cathode
R11	1200Ω	1	182-0122	BW-1-1200	Filter
R12	25Ω	1	189-0013		Rect. Ballast Wire-Wound

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SYLVANIA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	3KΩ	4.4Ω	170Ω	.7Ω	143-0011	A-3332 ①	A-3025 ①	RO-2 ①	① Bend Mounting Tabs down, to duplicate original mounting.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	SYLVANIA PART No.	JENSEN PART No.	QUAM PART No.	
SP1	P. M.	4.4Ω	539-0501	ST-105 Mod. P5-X	5A1	
	CONE DIA.	V. C. DIA.				
SP2	4 3/4 in.	9/16				

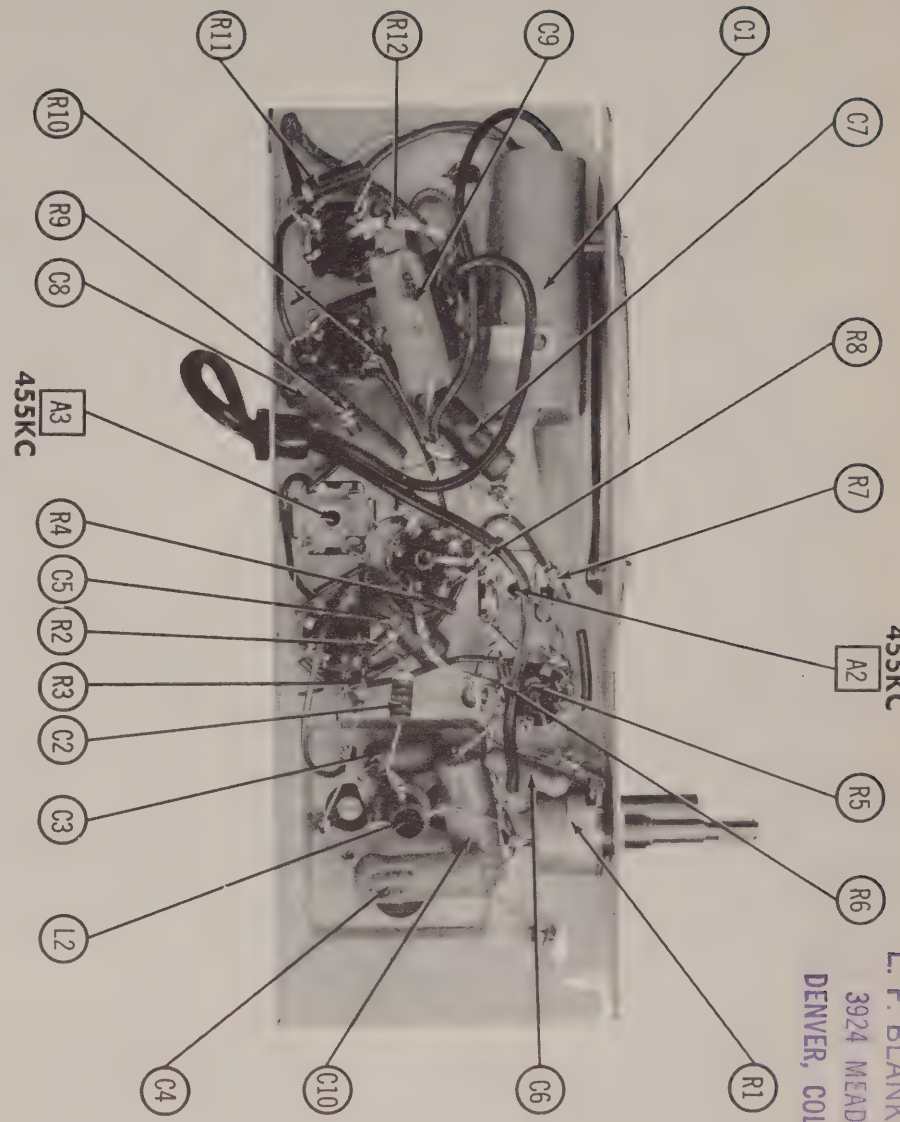
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	SYLVANIA PART No.	MERIT PART No.	
L1	Loop Ant.	2.5Ω		582-0011		
L2	Osc. Coil	8.5Ω		113-0015	BC-400	Tap@ 7.5Ω
L3	Input IF	21.5Ω	18Ω	121-0013	BC-352	
L4	Output IF	15.5Ω	18Ω	122-0013	BC-353	

MISCELLANEOUS

ITEM No.	PART NAME	SYLVANIA PART No.	NOTES
M1	2 Gang Var. Cap.	170-0006	(27-421MMF, 29-180MMF)
	Cabinet	813-0007	Black (511B)
	Cabinet	813-0017	Brown (512BR)
	Cabinet	813-0019	Chartreuse (512 CH)
	Cabinet	813-0020	Green (512GR)
	Cabinet	813-0022	Ivory (511H)
	Cabinet	813-0009	Mahogany (511M)
	Cabinet	813-0016	Red (512RE)
	Cabinet	813-0018	Yellow (512YE)
	Knob	740-0024	Vol. -On/Off

CHASSIS—BOTTOM VIEW



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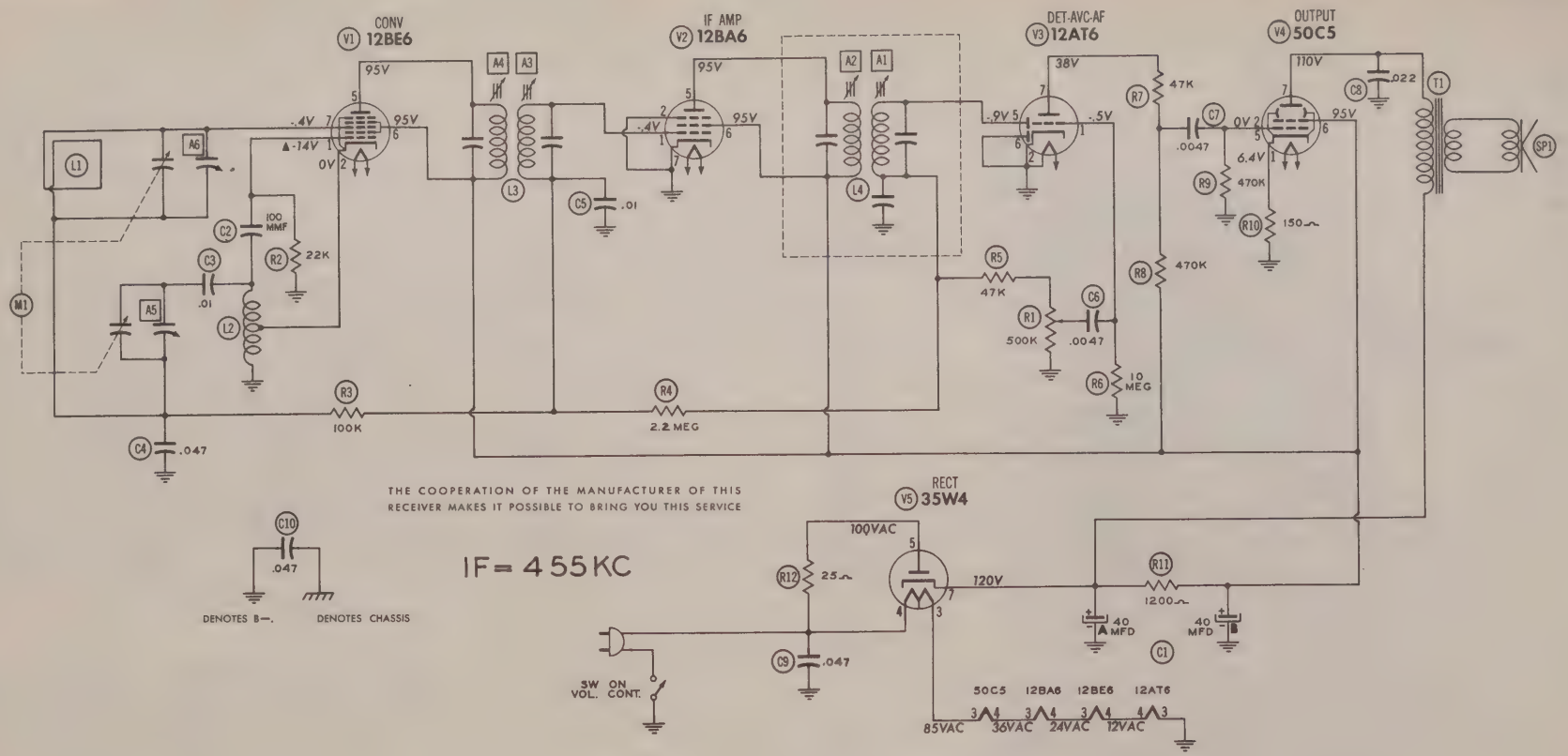
SYLVANIA MODEL 511B

SET 160 FOLDER 12

SYLVANIA MODEL 511B



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	1Ω	24Ω	12Ω	†1.2KΩ	†1.2KΩ	2.8Meg
V 2	12BA6	2.8Meg	0Ω	36Ω	24Ω	†1.2KΩ	†1.2KΩ	0Ω
V 3	12AT6	10Meg	0Ω	0Ω	12Ω	550KΩ	0Ω	†520KΩ
V 4	50C5	150Ω	470KΩ	86Ω	36Ω	470KΩ	†1.2KΩ	†170Ω
V 5	35W4	†1.2KΩ	INF	86Ω	121Ω	150Ω	105Ω	40KΩ

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 7 OF V5

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160-12

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

WESTINGHOUSE MODEL H-653K24
(Ch. V-2202-2 & V-2210-1)

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DATE 2-52 SET 160 FOLDER 13

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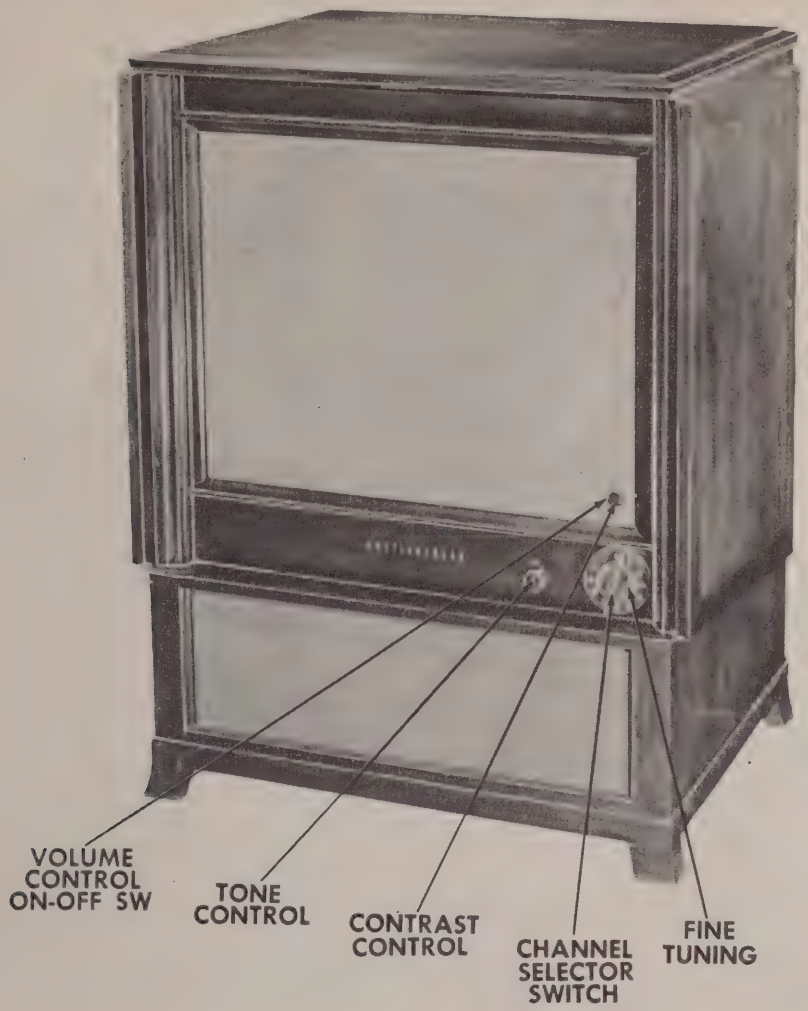

WESTINGHOUSE MODEL H-653K24
(Ch. V-2202-2 and V-2210-1)

TRADE NAME	Westinghouse Model H-653K24 (Ch. V-2202-2 & V-2210-1)
MANUFACTURER	Westinghouse Electric Corp., Television-Radio Div., Sunbury, Pa.
TYPE SET	Television Receiver
TUBES	Twenty Three
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING 2.3 Amp. @ 117 Volts AC
TUNING RANGE—	Channels 2 thru 13

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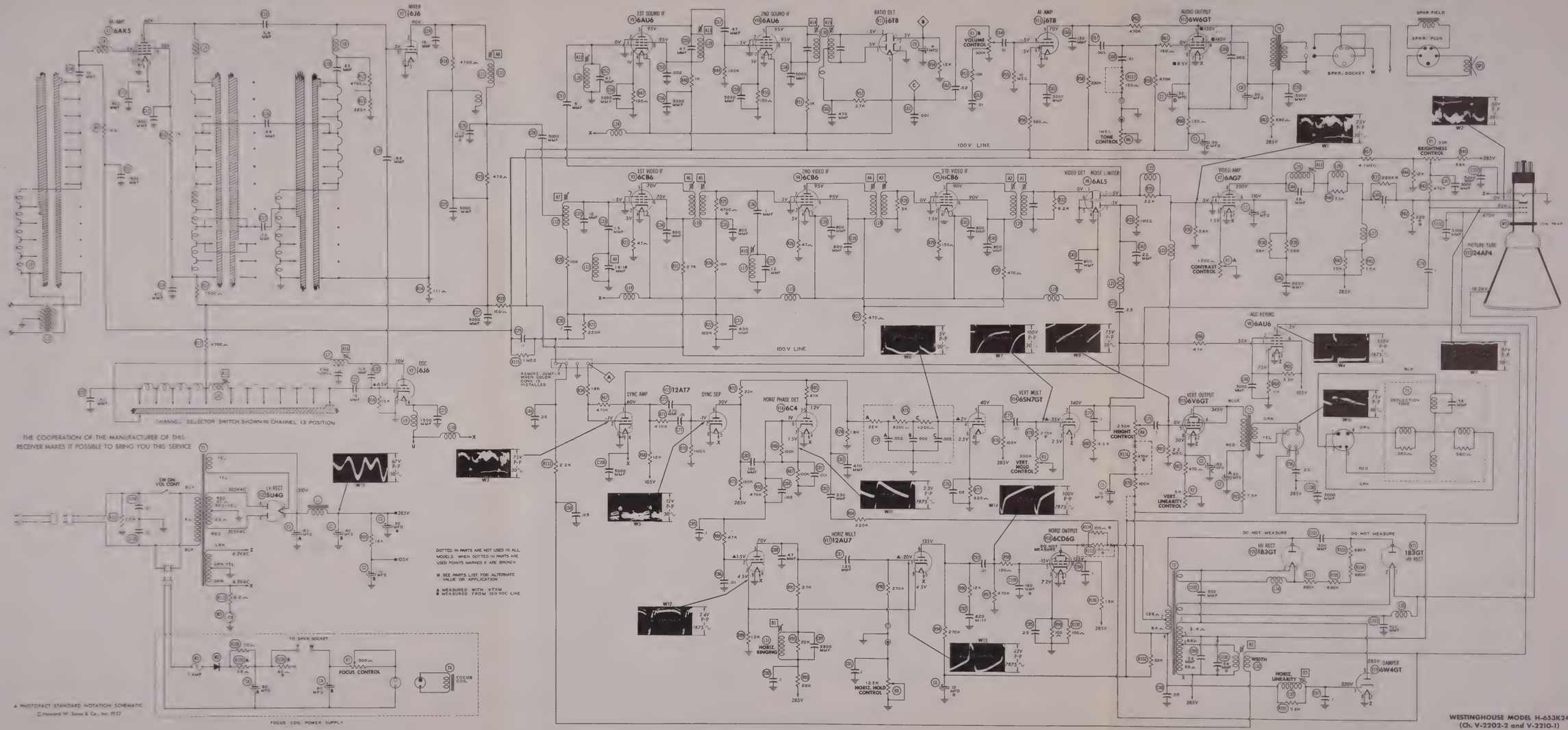
DATE 2-52 SET 160 FOLDER 13


RF AMP 6AK5
MIXER V7 6J6
OSC V2 6J6
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION
1ST SOUND IF V9 6AU6
2ND SOUND IF V10 6AU6
RATIO DET V11 6T8
AF AMP V11 6T8
AUDIO OUTPUT V13 6W6GT
SPKR FIELD
SPKR. PLUG
SPKR. SOCKET
VOLUME CONTROL
TONE CONTROL
100V LINE
1ST VIDEO IF V3 6CB6
2ND VIDEO IF V4 6CB6
3RD VIDEO IF V5 6CB6
VIDEO DET NOISE LIMITER V6 6AL5
VIDEO AMP V7 6AG7
CONTRAST CONTROL
BRIGHTNESS CONTROL
PICTURE TUBE V17 24AP4
ION TRAP
AGC KEYING V8 6AU6
REMOVE JUMPS WHEN COLOR CONV. IS INSTALLED
SYNC AMP V12 12AT7
SYNC SEP
HORIZ PHASE DET V10 6C4
VERT MULT V10 6SN7GT
VERT. HOLD CONTROL
VERT OUTPUT V13 6V6GT
HEIGHT CONTROL
VERT. LINEARITY CONTROL
DEFLECTION YOKE
HORIZ MULT V17 12AU7
HORIZ OUTPUT V18 6CD6G
HORIZ. RINGING
HORIZ. HOLD CONTROL
HV RECT V20 1B3GT
HV RECT V20 1B3GT
DO NOT MEASURE
WIDTH
HORIZ. LINEARITY
DAMPER V19 6W4GT
FOCUS CONTROL
FOCUS COIL
FOCUS COIL POWER SUPPLY
LV RECT 5U4G
FINE TUNING
TO SPKR SOCKET
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
MEASURED WITH V.T.V.M.
MEASURED FROM 100 VDC LINE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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WESTINGHOUSE MODEL H-653K24
(Ch. V-2202-2 & V-2210-1)

WESTINGHOUSE MODEL H-653K24
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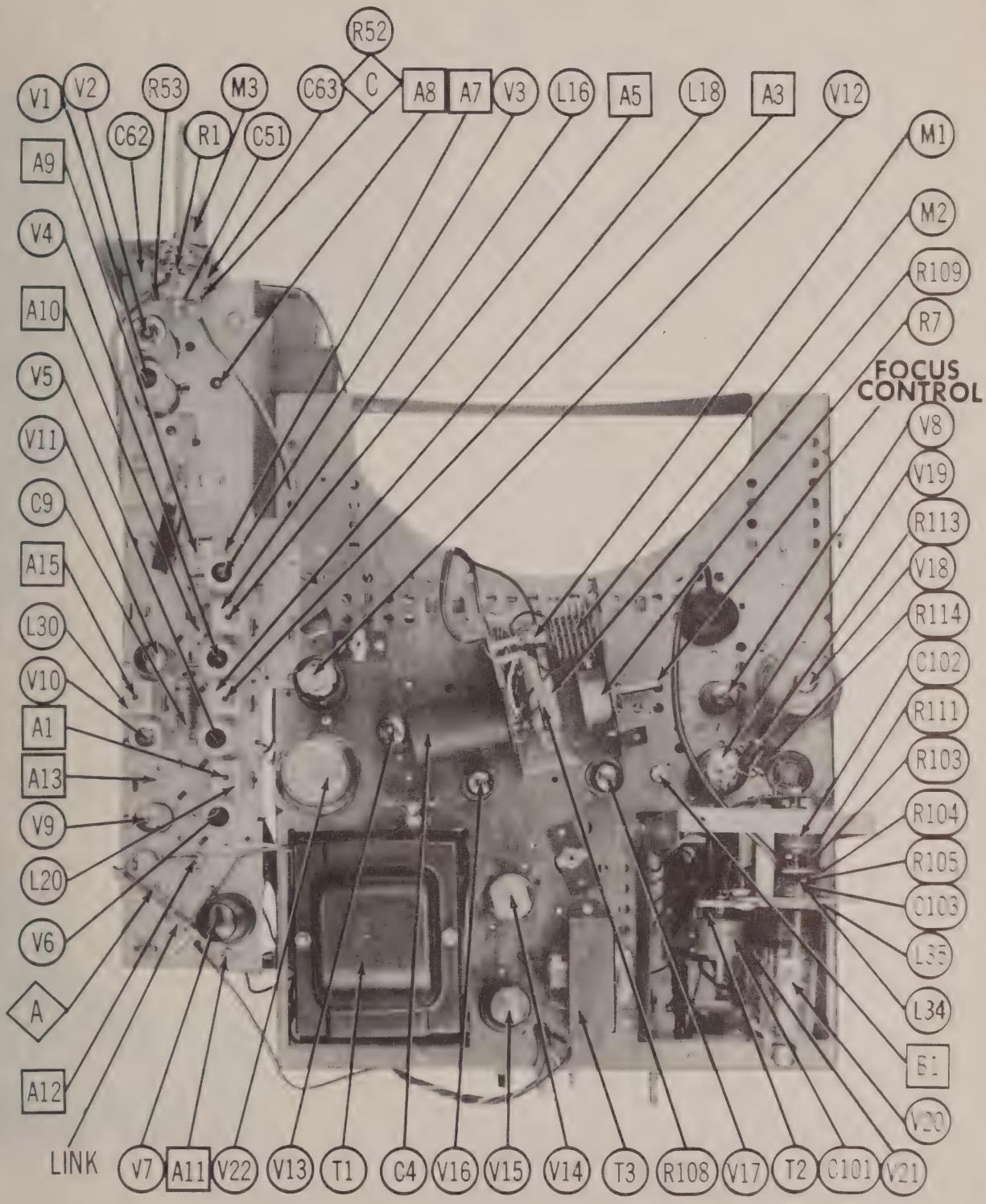

CHASSIS TOP VIEW

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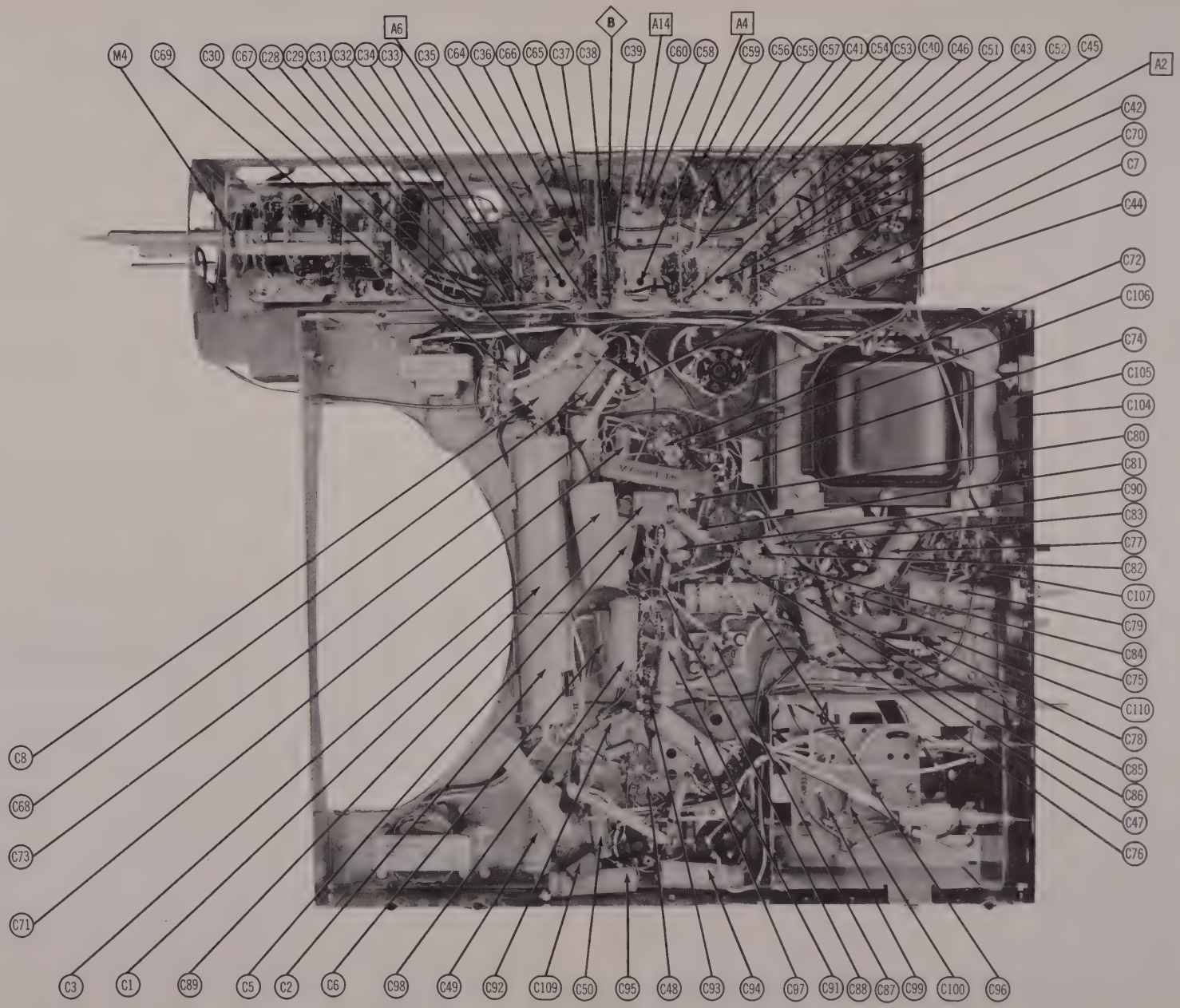

CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

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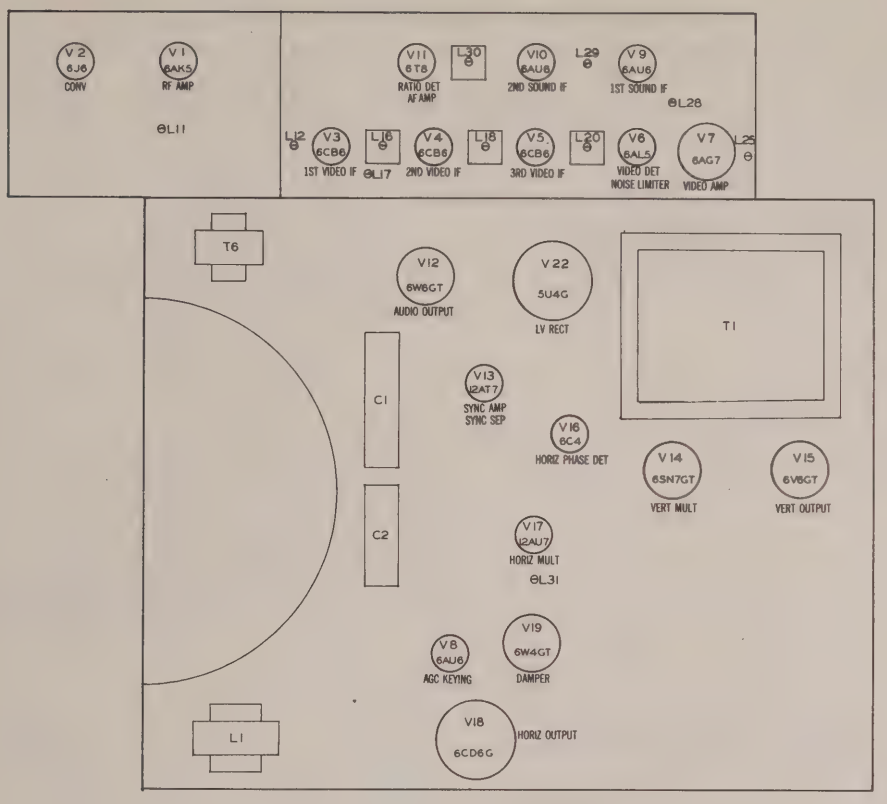
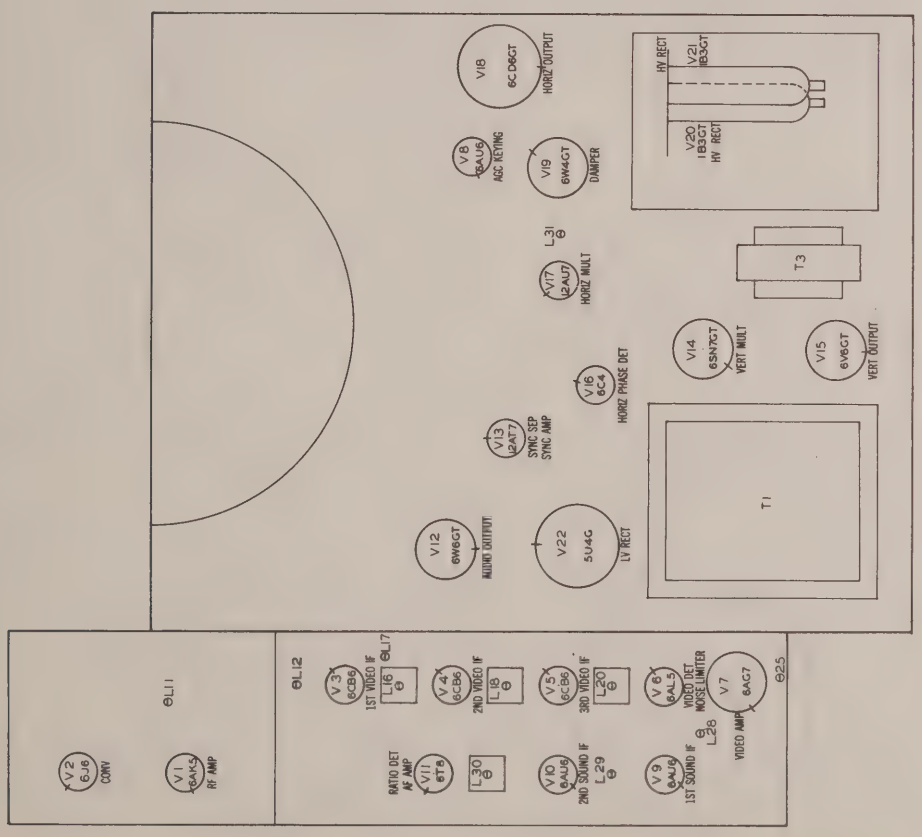


BOTTOM VIEW



TOP VIEW

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube, (V2), and replace it with 6J6 which has pin 1 removed, this will disable the local oscillator and prevent erroneous indications. During steps 1 and 2 it is necessary to detune the primary of the transformer feeding the grid to which the sweep generator is connected. To accomplish this clip an alligator clip to pin 5 of the preceding tube, the stray capacity thus added will sufficiently detune the transformer winding.
CAUTION: B+.
Connect the negative lead of a 3 volt battery to the ungrounded lead of C31, connect the positive lead to chassis.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.005MFD	High side to Pin 1, (grid) of 6CB6, (V5). Low side to chassis.	44MC (10MC swp)	42. 25MC 45.75MC	Any	Vert. amp. thru 33KΩ to Point (A). Low side to chassis.	A1, A2	Adjust for response curve similar to Fig. 1 with markers as shown.
2.	"	High side to Pin 1, (Grid) of 6CB6, (V5). Low side to chassis.	"	"	"	"	A3, A4	Adjust for response curve similar to Fig. 2.
3.	"	High side to Pin 1, (grid) of 6CB6, (V4). Low side to chassis.	"	"	"	"	A5, A6	Adjust for response curve similar to Fig. 3.
4.	"	"	"	"	"	"	A7, A8	Turn A9 fully clockwise. Adjust for response curve similar to Fig. 4.
5.	"	"	"	41.25MC	"	"	A9	Adjust for MINIMUM marker indication at the 41.25MC point on response curve.
6.	"	"	"	47.25MC	"	"	A10	Adjust for MINIMUM marker indication at the 47.25MC point on response curve.
7.	"	"	"	42.25MC 43MC 45MC 45.75MC	"	"		Check for response curve similar to Fig. 4. If necessary retouch A7 and A8 for proper response.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	.005MFD	High side to Point (A). Low side to chassis.	Not used	4.5MC (400% mod.)	Any	Vert. amp. to Pin 11, (cathode) of picture tube. Low side to chassis.	All	Adjust for MINIMUM 400% indication on scope.

SOUND IF ALIGNMENT

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	.005MFD	High side to point (A). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to point (B) Low side to chassis.	A12, A13 A14	Disconnect stabilizor capacitor C9. Adjust for maximum amplitude and symmetry as per fig. 5.
10.	"	"	"	"	"	Vert. Amp. to point (C) Low side to chassis.	A15	Reconnect capacitor C9. Adjust A15 so 4.5MC occurs at center of crossover lines as per fig. 6. SLIGHTLY retouch A14 for maximum amplitude and straightness of crossover lines.

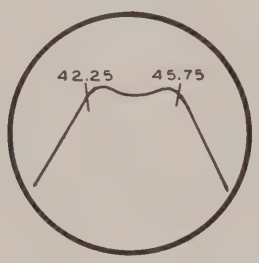


FIG.1

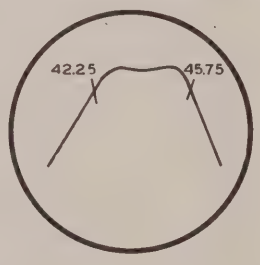


FIG. 2

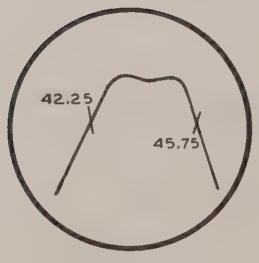


FIG.3

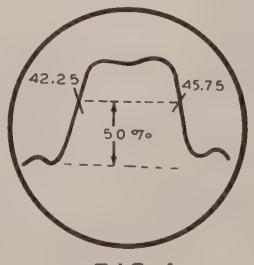


FIG.4

ALIGNMENT INSTRUCTIONS (CONT.)

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OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC swp.)	211.25MC 215.75MC	13	Vert. amp. thru 47KΩ to Point (A). Low side to chassis.	A16	Adjust to place video marker at 50% on response curve as shown in Fig. 7.
12.	"	"	207MC (10MC swp.)	205.25MC 209.75MC	12	"		Check all high band channels to see if the markers can be properly placed well within the range of the fine tuning control. If not make compromise adjustment of A16.
			201MC (10MC swp.)	199.25MC 203.75MC	11			
			195MC (10MC swp.)	193.25MC 197.75MC	10			
			189MC (10MC swp.)	187.25MC 191.75MC	9			
			183MC (10MC swp.)	181.25MC 185.75MC	8			
			177MC (10MC swp.)	175.25MC 179.75MC	7			
13.	"	"	85MC (10MC swp.)	83.25MC 87.75MC	6	"	A17	Adjust to place markers as shown in Fig. 7.
14.	"	"	79MC (10MC swp.)	77.25MC 81.75MC	5	"		Check all low band channels to see if the markers can be properly placed well within the range of the fine tuning control. If not make compromise adjustment of A17.
			69MC (10MC swp.)	67.25MC 71.75MC	4			
			63MC (10MC swp.)	61.25MC 65.75MC	3			
			57MC (10MC swp.)	55.25MC 59.75MC	2			

THE RF AND MIXER PORTION OF THIS RECEIVER HAS BEEN PROPERLY ALIGNED AT THE FACTORY AND IS VERY STABLE. ALIGNMENT OF THIS PORTION SHOULD NOT BE REQUIRED IN THE FIELD.

FIG. 5

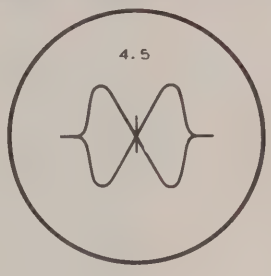


FIG. 6

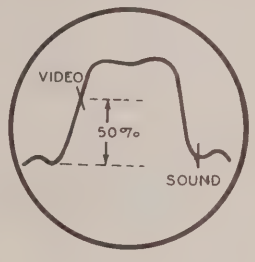
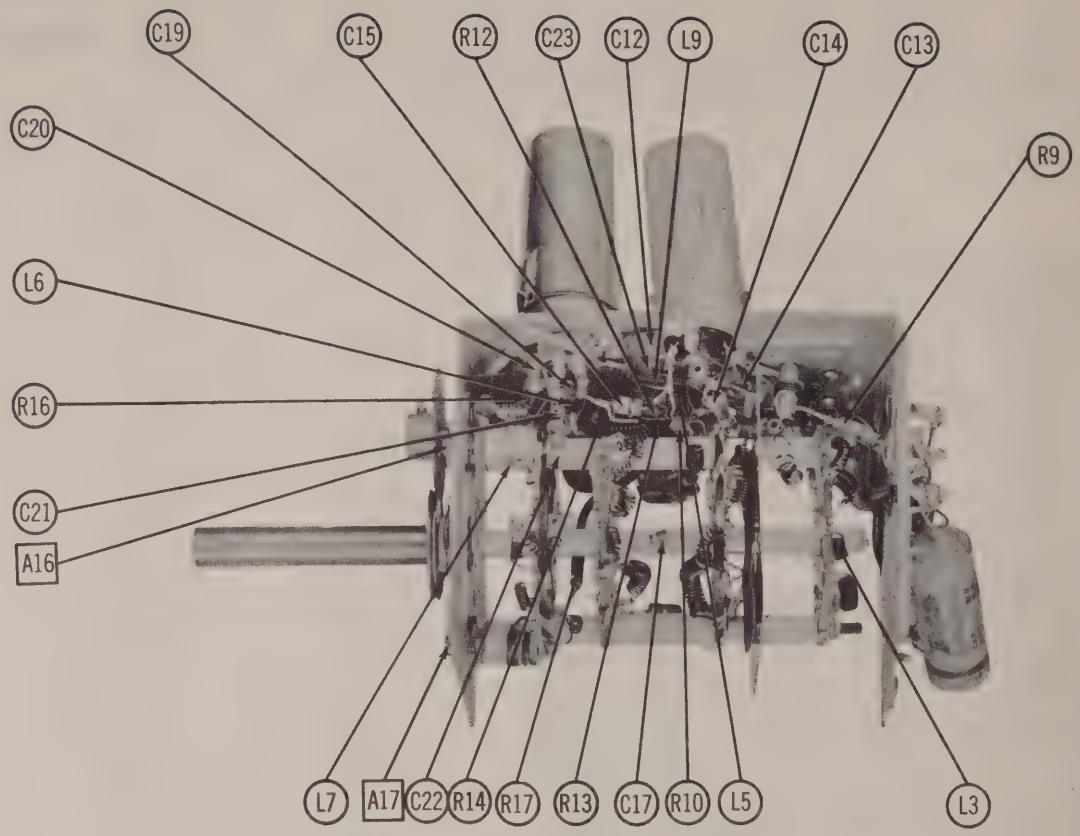


FIG. 7

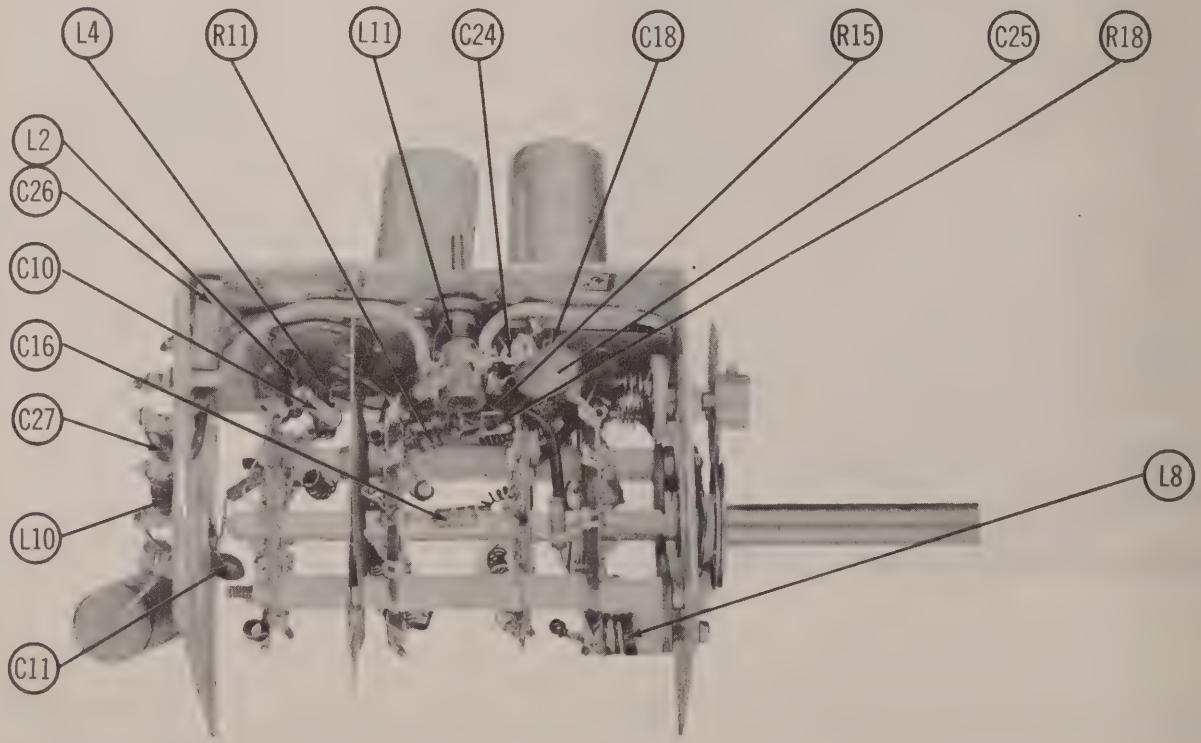
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AK5	1.2Meg	0Ω	.1Ω	0Ω	■7.6KΩ	■8.6KΩ	0Ω		
V 2	6J6	■4.8KΩ	■620Ω	0Ω	.1Ω	220KΩ	15KΩ	0Ω		
V 3	6CB6	110KΩ	47Ω	.1Ω	0Ω	■2.7KΩ	■2.7KΩ	0Ω		
V 4	6CB6	110KΩ	47Ω	.1Ω	0Ω	■470Ω	■470Ω	0Ω		
V 5	6CB6	.4Ω	150Ω	.1Ω	0Ω	■940Ω	■940Ω	0Ω		
V 6	6AL5	.4Ω	1Meg	1.6Ω	0Ω	0Ω	0Ω	5.6KΩ		
V 7	6AG7	0Ω	0Ω	0Ω	5.6KΩ	100Ω	†28KΩ	.1Ω	†3.8KΩ	
V 8	6AU6	†27KΩ	7.5KΩ	.1Ω	0Ω	320KΩ	†12KΩ	7.5KΩ		
V 9	6AU6	1.2Ω	0Ω	.1Ω	0Ω	■1KΩ	■1KΩ	150Ω		
V 10	6AU6	100KΩ	0Ω	.1Ω	0Ω	■1KΩ	■1KΩ	150Ω		
V 11	6T8	Inf.	12KΩ	Inf.	0Ω	.1Ω	1.1Meg	0Ω	10Meg	■220KΩ
V 12	6W6GT	Inf.	0Ω	†950Ω	†720Ω	■470KΩ	■470KΩ	.1Ω	■150Ω	
V 13	12AT7	†20KΩ	23KΩ	0Ω	.1Ω	.1Ω	23KΩ	1Meg	0Ω	0Ω
V 14	6SN7GT	600KΩ	#600KΩ	820Ω	40KΩ	†100KΩ	820Ω	.1Ω	0Ω	
V 15	6V6GT	0Ω	.1Ω	#8.1KΩ	#8.1KΩ	2.2Meg	4.3KΩ	0Ω	1.4KΩ	
V 16	6C4	49KΩ	Inf.	0Ω	.1Ω	49KΩ	200KΩ	100KΩ		
V 17	12AU7	†80KΩ	715KΩ	1.2KΩ	.1Ω	.1Ω	#300KΩ	360KΩ	1.2KΩ	0Ω
V 18	6CD6G	Inf.	0Ω	50Ω	Inf.	470KΩ	Inf.	.1Ω	†7.5KΩ	TOP CAP #120Ω
V 19	6W4GT	Inf.	Inf.	110KΩ	Inf.	†58Ω	Inf.	.1Ω	0Ω	
V 20	1B3GT	PINS 1 THROUGH 8 HAVE INF RESISTANCE								TOP CAP #200Ω
V 21	1B3GT	PINS 1 THROUGH 8 HAVE INF RESISTANCE								TOP CAP #Inf.
V 22	5U4G	Inf.	16KΩ	Inf.	20Ω	Inf.	22Ω	Inf.	16KΩ	
V 23	24AP4	0Ω	500KΩ	PIN 10 #33KΩ	PIN 11 60KΩ	PIN 12 .1Ω				

ALL CONTROLS SET FOR NORMAL OPERATION - NO SIGNAL APPLIED
† MEASURED FROM PIN 2 OF V22
# MEASURED FROM PIN 3 OF V 19
■ MEASURED FROM 100 VDC LINE.

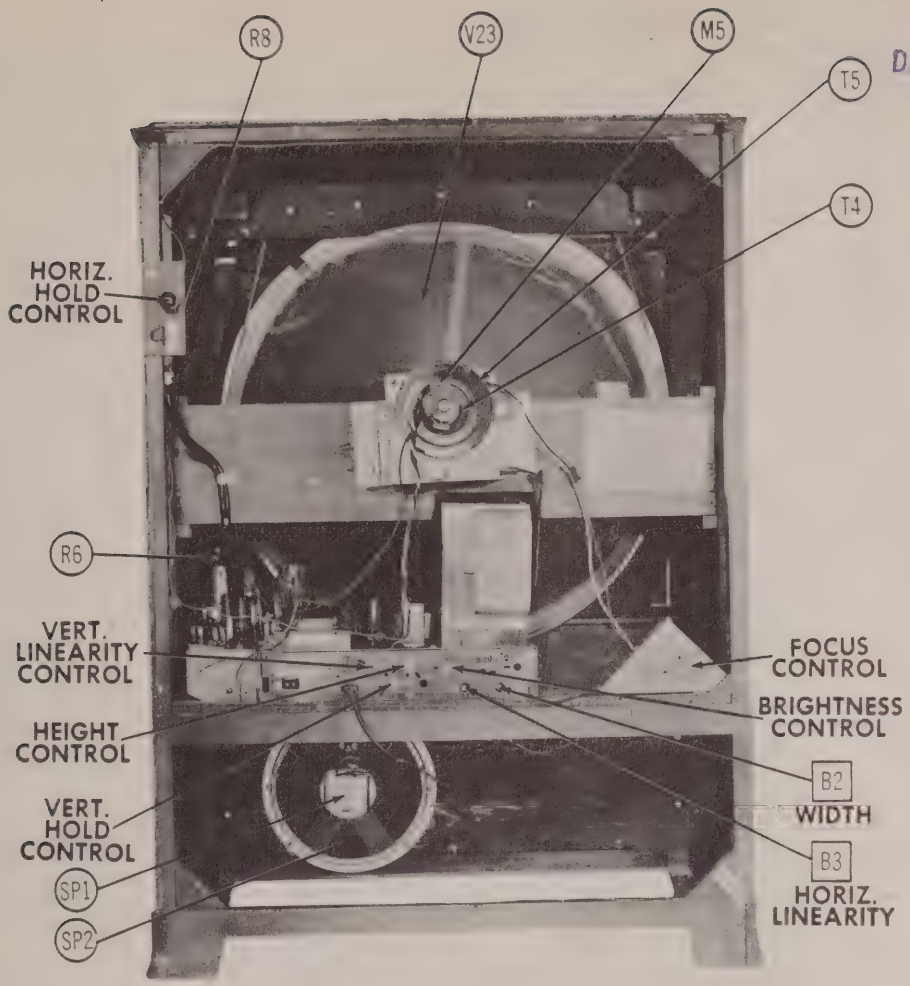


RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range.

Adjust the core of the "ringing coil", (B1), to the center of the range over which the picture synchronizes horizontally.

Adjust the width slug, (B2), until the picture is slightly wider than necessary to fill the mask horizontally.

Adjust the horizontal linearity slug, (B3), until the picture is symmetrical from left to right.

DISASSEMBLY INSTRUCTIONS

1. Remove 8 wood screws and back cover.
2. Remove 6 push on type control knobs from front panel.
3. Disconnect tone control, speaker, focus unit, and picture tube.
4. Remove horizontal hold unit and disconnect built-in antenna.
5. Disconnect high voltage lead and yoke plug.
6. Remove chassis bolts. Remove chassis.

Note: For picture tube removal it is necessary to remove chassis as outlined above.

PARTS LIST AND DESCRIPTIONS

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Westinghouse Part No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6AK5	6AK5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Det.-Noise Limiter	6AL5	6AL5	6BT	
V7	Video Amp.	6AG7	6AG7	8Y	
V8	Keyed AGC	6AU6	6AU6	7BK	
V9	1st Sound IF Amp	6AU6	6AU6	7BK	
V10	2nd Sound IF Amp.	6AU6	6AU6	7BK	
V11	Ratio Det. -AF Amp.	6T8	6T8	9F	
V12	Audio Output	6W6GT	6W6GT	7AC	
V13	Sync Amp. - Sync. Sep.	12AT7	12AT7	9T	
V14	Vert. Mult.	6SN7GT	6SN7GT	8BD	
V15	Vert. Output	6V6GT	6V6GT	7AC	
V16	Horiz. Phase Det.	6C4	6C4	6BG	
V17	Horiz. Mult.	12AU7	12AU7	9A	
V18	Horiz. Output	6CD6G	6CD6G	5BT	
V19	Damper	6W4GT	6W4GT	4CG	
V20	HV Rect.	1B3GT	1B3GT	3C	
V21	HV Rect.	1B3GT	1B3GT	3C	
V22	LV Rect.	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: Westinghouse Part No.	SYLVANIA Part No.	THOMAS Part No.	RTMA BASE TYPE	NOTES
V23	24AP4			12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Westinghouse Part No.	AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	ERIE Part No.	SPRAGUE Part No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	V-9891	AFH4-93		UPT4445-3335		TVL-4720	▫ Filter
B	40	450							■ Filter
C	30	350							▲ Decoupling
D	30	350							Audio Output Cathode
C2A	30	450	V-10306-1	AFH3-140		UPT4145-V10		TVL-3753	▫ Vert. Output Dec.
B	10	450		PRS50/50					■ Decoupling
C	150	50							▲ Vert. Output Cathode
C3	30	450	V-8570	PRS450/30		BR3045A		TVA-1711	Filter *
C4A	80	150	V-10572	AFH2-20		UP8830		TVL-2585	▫ Focus Filter
B	80	150							▲ Focus Filter
C5	10	450	V-10293-1	PRS450/10		BR1045A		TVA-1705	Decoupling
C6	10	450	V-10293-1	PRS450/10		BR1045A		TVA-1705	Accelerating Anode Dec. †
C7	10	350	V-10117	PRS250/12		BR1225A		TVA-1504	Video Amp. Screen
C8	30	450	V-8570	PRS450/30		BR3045A		TVA-1711	Audio Output Dec.
C9	4	50	V-4637	PRS150/4		BR550		TVA-1303	Stabilizing Cap.
C10	15			SII5	D6-150		GP1K-150	5GA-Q15	RF Coupling
C11	1500			BPD-0015	DD-152		801-0015	5HK-D15	AGC Filter
C12	1500			BPD-0015	DD-152		801-0015	5HK-D15	RF Amp. Screen
C13	1500			BPD-0015	DD-152		801-0015	5HK-D15	RF Amp. Fil.
C14	470			SI470	D6-471		GP2K-471	5GA-T47	RF Amp. Plate
C15	3.9						N330K-1R5		RF Coupling
C16	.68				TCZ-.68		NP0K-R68		RF Coupling
C17	.75						NP0K-R75		RF Coupling
C18	25			SI25	D6-250		GP1K-250	5GA-Q25	RF Coupling
C19	.68				TCZ-.68		NP0K-R68		Osc. Coupling
C20	1.5						N330K-1R5		Osc. Feedback
C21	10			SI0NP0	TCZ-10		NP0K-100	5TCC-Q1	Osc. Grid Cap.
C22	5.1			SI5NP0			NP0K-050		Fixed Trimmer
C23	1500			BPD-0015	DD-152		801-0015	5HK-D15	Conv. Fil.
C24	15			SII5	D6-150		GP1K-150	5GA-Q15	Fixed Trimmer
C25	5000		V-5596	BPD-005	DD-502		811-005	5HK-D5	RF Bypass
C26	270	500		1469-0003		5R5T3		MS-33	Fixed Trimmer
C27	5000		V-5596	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C28	5000		V-5596	BPD-005	DD-502	1D5D5	811-005	5HK-D5	IF Coupling
C29	.1	400	RCP10W4104M	P468-1	DF-104	PTE4P1		4TM-P1	AFC Filter
C30	.1	400	RCP10W4104M	P468-1	DF-104	PTE4P1		4TM-P1	AGC Filter
C31	800		V-9863-1	BPD-0008	DD-801	1W5T8	801-001	5HK-D1	AGC Filter
C32	12		R3CC20SLI20K	SII2	D6-120		GP1K-120		Fixed Trimmer
C33	1.5		V-9928-1	SII.5NP0	TCZ-1.5		NP0K-1R5		IF Coupling
C34	800		V-9863-1	BPD-0008	DD-801	1W5T8	801-001	5HK-D1	1st Video IF Dec.
C35	800		V-9863-1	BPD-0008	DD-801	1W5T8	801-001	5HK-D1	AGC Filter
C36	1		V-5658-1		TCZ-010		NP0K-010		IF Coupling
C37	12		R3CC20SLI20K	SII2	D6-120		GP1K-120		Fixed Trimmer
C38	800		V-9863-1	BPD-0008	DD-801	1W5T8	801-001	5HK-D1	2nd. Video IF Dec.
C39	800		V-9863-1	BPD-0008	DD-801	1W5T8	801-001	5HK-D1	2nd. Video IF Fil.
C40	800		V-9863-1	BPD-0008	DD-801	1W5T8	801-001	5HK-D1	3rd. Video IF Dec.
C41	800		V-9863-1	BPD-0008	DD-801	1W5T8	801-001	5HK-D1	3rd. Video IF Fil.
C42	22	500	RCM20B220K	1469-000025	TCZ-22	5R5Q25	NP0K-220	MS-425	Noise Limiter Plate
C43	800		V-9863-1	BPD-0008	DD-801	1W5T8	801-001	5HK-D1	Video Det. Fil.
C44	56	500	RCM20B560K					MS-46	Fixed Trimmer
C45	.1	400	RCP10W4104M	P468-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C46	5000		V-5596	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C47	5000		V-5596	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C48	5000		V-5596	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Keyed AGC Cath.
C49	.25	400	RCP10W4254M	P488-25		GT4P25		4TM-P25	AGC Filter
C50	.05	400	RCP10W4503M	P488-05	DF-503	PTE4S5		4TM-S5	AGC Filter
C51	4.7		V-9926-3	SI4.7NP0	TCZ4.7		NP0K-4R7		Sound IF Coupling
C52	47	500	RCM20B470K	1469-00005		5R5Q5		MS-45	Fixed Trimmer
C53	.002	800	RCP10W6202M	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	1st. Sound IF Dec.
C54	5000		V-5596	BPD-005	DD-502	1D5D5	811-005	5HK-D5	1st. Sound IF Cathode
C55	47	500	RCM20B470K	1469-00005		5R5Q5		MS-45	Fixed Trimmer
C56	5000		V-5596	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C57	47	500	RCM20B470K	1468-00005	D6-470	5W5Q5	GP1K-470	1FM-45	Sound IF Coupling
C58	5000		V-5596	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Sound IF Dec.
C59	5000		V-5596	BPD-005	DD-502	1D5D5	811-005	5HK-D5	2nd. Sound IF Cathode
C60	470		R5CC20ZY471K	SI470	D6-471	5W5T5	GP2K-471	5GA-T47	Diode Load Cap.
C61	.001	400	RCP10W2102M	P668-001	D6-102	PTE6D1	GP2L-102	6TM-D1	De-emphasis
C62	.02	400	RCP10W4203M	P488-02	DF-203	PTE4S2		4TM-S2	Audio Coupling

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Westinghouse Part No.	AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	ERIE Part No.	SPRAGUE Part No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C63	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Tone Comp.
C64	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C65	5000		V-5596	BPD-005	DD-502	1D5D5	811-005	5HK-D5	AGC Clamper Bypass
C66	150	500	RCM20B151M	1468-00015	D6-151	5W5T15	GP2K-151	1FM-315	AF Amp. Plate
C67	.005	400	RCP10W4502M	P688-005	D6-502	PTE6S5	GP2-333-502	6TM-D5	Audio Coupling
C68	.01	600	RCP10W4103M	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Tone Comp.
C69	.002	600	RCP10W6202M	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Audio Output Plate
C70	5000		V-5596	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass
C71	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1		4TM-S1	Sync. Coupling
C72	270	500	RCM20B271K	1468-0003	D6-271	5W5T3	GP2K-271	MS-33	Sync. Coupling
C73	.25	400	RCP10W4254M	P488-25		GT4P25		4TM-P25	Sync. Coupling
C74A	.002			P688-002		PTE6D2	GP2-333-202		Vert. Integrator Net.
B	.005		V-9213	P688-005	PC-100	PTE6D5	GP2-333-502	R1C1◊	Vert. Integrator Net.
C	.005			P688-005		PTE6D5	GP2-333-502		Vert. Integrator Net.
C75	.01	400	RCP10W4103K	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Vert. MV Feedback
C76	.05	400	RCP10W4503M	P488-05	DF-503	PTE4S5		4TM-S5	Vert. MV Cathode
C77	.1	400	RCP10W4104K	P488-1	DF-104	PTE4P1		4TM-P1	Vert. Discharge
C78	.1	400	RCP10W4104K	P488-1	DF-104	PTE4P1		4TM-P1	Vert. Sweep Coupling
C79	.1	600	RCP10M6104M	P688-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling
C80	100	500	RCM20B101K	1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	Horiz. Sync. Coupling
C81	.001	600	RCP10W1102M	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Phase Det. Cathode
C82	330	500	RCM20B331K	1469-00035					Horiz. Feedback
C83	470	500	RCM20B471K	1469-0005		5R5T5		MS-35	Voltage Divider
C84	.005	400	RCP10W4502M	P688-005	D6-502	PTE4D5	GP2-333-502	6TM-D5	AFC Coupling
C85	.1	400	RCP10W4104K	P488-1	DF-104	PTE4P1		4TM-P1	AFC Filter
C86	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	AFC Filter
C87	120	500	RCM20C121J	1469-00015		5R5T15			Horiz. MV Feedback
C88	47	500	RCM20B470K	1469-00005		5R5Q5		MS-45	Horiz. MV Plate
C89	3900	500	RCM30C392K	1464-004		1DR5D4			Fixed Trimmer
C90	.1	400	RCP10W4104M	P488-1	DF-104	PTE4P1		4TM-P1	RF Bypass
C91	.1	400	RCP10W4104M	P488-1	DF-104	PTE4P1		4TM-P1	Horiz. Hold Bypass
C92	820	500	RCM20C821K						Horiz. Discharge
C93	.01	400	RCP10M6103M	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Horiz. Sweep Coupling
C94	.1	600	RCP10M6104M	P688-1	DF-104	PTE6P1		6TM-P1	Horiz. Output Screen
C95	.25	400	RCP10W4254M	P488-25		GT4P25		4TM-P25	Horiz. Output Cathode
C96	.25	400	RCP10W4254M	P488-25		GT4P25		4TM-P25	Horiz. Sweep Coupling
C97	.1	600	RCP10M6104M	P688-1	DF-104	PTE6P1		6TM-P1	Damper Filter
C98	.06	600	RCP10M6603M	684-06				6TM-86	Damper Filter
C99	56	1500	V-9178-1560K						Fixed Trimmer
C100	56	1500	V-9178-1560K						Fixed Trimmer *
C101	500	20000	V-9901-2	HV-20C	TV3-502				HV Doubler
C102	500	20000	V-9901-2	HV-20C	TV3-502				HV Filter
C103	500	20000	V-9901-2	HV-20C	TV3-502				HV Filter
C104	.01	600	V-5040-15	P688-01		PTE6S1		6TM-S1	Line Filter
C105	.01	600	V-5040-15	P688-01		PTE6S1		6TM-S1	Line Filter
C106	5000		V-5596	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Sync. Amp. Fil.
C107	5000		V-5596	BPD-005	DD-502	1D5D5	811-005	5HK-D5	Picture Tube Fil.
C108	5000		V-5596	BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass *
C109	180	500		1469-0002		5R5T2		MS-32	Horiz. Output Grid *
C110	5000		V-5596	BPD-005	DD-502	TM5D5	811-005	5HK-D5	RF Bypass *

* Not used in all models.
† Some models use .1MFD in this application. (Part No. RCP10W8104M)
‡ Some models use .05MFd in this application. (Part No. RCP10W4503M)
◊ Items C74A, C74B, C74C, R75A, R75B, R75C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Westinghouse Part No.	IRC Part No.	CLAROSTAT Part No.	CENTRALAB Part No.	INSTALLATION NOTES
R1A	1500Ω	½	V10854-1	Concentrikit	RTV-288	SBBT-692-S	Contrast Control- Panel
B	500KΩ			B11-109 *			Volume Control- Tapped ⑤ 50KΩ Rear
C	Shaft End			B18-133X *			Attach per instructions in Concentrikit
D	Switch			E-202 *			Attach per instructions in Conentrikit
				76-1 *			
R2A	5000Ω	½	V8463	Q11-114	AG-19-S	AN-10	Vertical Linearity
B	Shaft			Not Req.	RS-2	AK-1	Attach to R2A per instructions.
R3A	500KΩ	½	V9894-1	Q11-133	AG-58-S	AN-59	Vertical Hold
B	Shaft			Not Req.	RS-2	AK-1	Attach To R3A per instructions.
R4A	250KΩ	½	V9813-3	Q11-130	AG-55-S	AN-50	Height Control
B	Shaft			Not Req.	FSK-1/4	AK-1	Attach to R4A per instructions.
R5A	50KΩ	½	V9916-1	Q11-123	AG-44-S	AN-31	Brightness Control
B	Shaft			Not Req.	RS-2	AK-1	Attach to R5A per instructions.
R6A	1Meg	½	V10130-4	Q11-137	AG-61-S	B-69	Tone Control
B	Shaft			Not Req.	FS-3	Not Req.	Attach to R6A per instructions.
R7A	300Ω	½	V5908-2		43-300		Focus Control
B	Shaft				Not Req.		Attach to R7A per instructions.
R8A	125KΩ	½	V10509-1		AG-49-S	B-44	Horiz. Hold Control
B	Shaft				FS-3	Not Req.	Attach to R8A per instructions.

* Additional parts to be used with Concentrikit

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Westinghouse Part No.	IRC Part No.	IDENTIFICATION CODES: All resistors ± 20% unless otherwise noted
R9	15KΩ	½		BTS-15K	RF Amp. Grid
R10	10000Ω			BTS-1000	RF Amp. Screen
R11	7500Ω				RF Decoupling
R12	4.7KΩ 10%			BTS-4.7K	Mixer Grid
R13	220KΩ			BTS-220K	Mixer Grid
R14	111Ω				Feedback
R15	470Ω			BTS-470	Mixer Plate
R16	15KΩ				Osc. Plate
R17	4700Ω			BTS-4700	Osc. Grid
R18	4700Ω			BTS-4700	Mixer Plate Shunt
R19	150Ω		RC20AE151K	BTS-150	Decoupling
R20	10KΩ		RC20AE103M		AGC Network
R21	220KΩ 10%		RC20AE224K		Voltage Divider
R22	100KΩ 10%		RC20AE104K		Voltage Divider
R23	47Ω		RC20AE470K	BTS-47	1st Video IF Amp. Cathode
R24	10KΩ		RC20AE103M		AGC Network
R25	4700Ω 5%		V-9927-2	BTS-4700 5%	1st Video IF Shunt See note 1.
R26	47Ω		RC20AE470K	BTS-47	1st Video IF Cathode
R27	470Ω		RC20AE471M	BTS-470	Decoupling
R28	3KΩ 5%		V9927-5	BTS-3K 5%	2nd Video IF Shunt
R29	150Ω 10%		RC20AE151K	BTS-150	3rd Video IF Cathode
R30	470Ω		RC20AE471M	BTS-470	3rd. Video IF Decoupling

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Westinghouse Part No.	IRC Part No.	IDENTIFICATION CODES
R31	2.7KΩ	½	RC20AE272K	BTS-2.7K	Decoupling
R32	8.2KΩ 5%	½	V9927-4	BTS-8.2K 5%	3rd. Video IF Coil Shunt
R33	1Meg 10%	½	RC20AE105M	BTS-1Meg	Limiter Plate
R34	18KΩ 10%	½	RC20AE183K	BTS-18K	Isolation
R35	22KΩ	½	RC20AE223K	BTS-22K	Peaking Coil Shunt
R36	5.6KΩ 10%	½	V9927-3	BTS-5.6K	Video Amp. Grid
R37	220KΩ 10%	½	RC20AE104K	BTS-220K	Picture Tube Cathode See note 2.
R38	56KΩ 10%	1	RC30AE563K	BTA-56K	Video Amp. Screen
R39	56KΩ 10%	1	RC30AE563K	BTA-56K	Video Amp. Screen
R40	7.5KΩ 10%	2	RC40AE752K		Video Amp. Plate
R41	7.5KΩ 10%	2	RC40AE752K		Video Amp. Plate
R42	220KΩ 10%	½	RC20AE104K	BTS-220K	Picture Tube Cathode See note 2.
R43	470KΩ 10%	½	RC20AE474K	BTS-470K	Picture Tube Grid
R44	12KΩ 10%	½	RC20AE123K	BTS-12K	Voltage Divider
R45	68KΩ 10%	½	RC20AE683K	BTS-68K	Voltage Divider
R46	33KΩ	½	RC20AE333K	BTS-33K	Peaking Coil Shunt
R47	150Ω 10%	½	RC20AE151K	BTS-150	1st Sound IF Amp. Cathode
R48	1KΩ	½	RC20AE102M	BTS-1K	1st. Sound IF Amp. Decoupling
R49	100KΩ 10%	½	RC20AE104K		2nd. Sound IF Amp. Grid
R50	150Ω 10%	½	RC20AE151K	BTS-150	2nd. Sound IF Amp. Cathode
R51	1KΩ	½	RC20AE102M	BTS-1K	2nd. Sound IF Amp. Decoupling
R52	27KΩ 10%	½	RC20AE273K	BTS-27K	De-emphasis
R53	10KΩ 10%	½	RC20AE103M	BTS-10K	Tone Compensation
R54	12KΩ 10%	½	RC20AE123K	BTS-12K	Ratio Detector Load
R55	10Meg	½	RC20AE106M	BTS-10Meg	Audio Amp. Grid
R56	560Ω 10%	½	RC20AE561K	BTS-560	AGC Clamper Load
R57	4.7Meg	½	RC20AE475K	BTS-4.7Meg	Voltage Divider
R58	330KΩ 10%	½	RC20AE334K	BTS-330K	Audio Amp. Plate
R59	470KΩ	½	RC20AE474M	BTS-470K	Output Grid
R60	150Ω 10%	½	RC20AE151K	BTS-150	Output Cathode
R61	150Ω 10%	1	RC30AE151K		Parasitic Suppressor
R62	470KΩ	½	RC20AE474M	BTS-470K	Feedback Network
R63	680Ω	5	V-6984-2		Decoupling - Wire Wound
R64	10KΩ 10%	2	RC40AE103K	BTB-10K	Keyed AGC Cathode
R65	3.3KΩ 10%	1	RC30AE332K	BTA-3.3K	Voltage Divider
R66	4.7KΩ	½	RC20AE472K	BTS-4.7K	Keyed AGC Grid
R67	470KΩ 10%	½	RC20AE474K	BTS-470K	Sync. Amp. Grid
R68	12KΩ 10%	½	RC20AE123K	BTS-12K	Sync. Amp. Plate
R69	15KΩ	5	V-6984-15		Decoupling - Wire Wound
R70	1Meg 10%	½	RC20AE105K	BTS-1Meg	Sync. Amp. Grid
R71	470KΩ 10%	½	RC20AE474K	BTS-470K	Isolation
R72	22KΩ 10%	½	RC20AE223K	BTS-22K	Voltage Divider
R73	150KΩ 10%	½	RC20AE154K	BTS-150K	Sync. Separator Plate
R74	1.8KΩ 10%	½	RC20AE182K	BTS-1.8K	Voltage Divider
R75A	22KΩ			BTS-22K	Integrator Network
B	8.2KΩ			BTS-8.2K	Integrator Network
C	8.2KΩ			BTS-8.2K	Integrator Network
R76	100KΩ 10%	1	RC30AE104K	BTA-100K	Vertical Multivibrator Plate
R77	820Ω 10%	½	RC20AE821K	BTS-820	Vertical Multivibrator Cathode
R78	270KΩ 10%	½	RC20AE474K	BTS-270K	Vertical Multivibrator Grid - See Note 3
R79	100KΩ 10%	½	RC20AE104K	BTS-100K	Decoupling
R80	4.3KΩ 5%	½	RC20AE432J	BTS-4.3K 5%	Vert. Blanking Network
R81	2.2Meg 10%	½	RC20AE225K	BTS-2.2Meg	Vertical Output Grid
R82	470Ω 10%	½	RC20AE471K	BTS-470	Vertical Output Cathode
R83	7.5KΩ	10	V9600-3	1 3/4A-7500	Vertical Output Decoupling - Wire Wound
R84	220KΩ 10%	½	RC20AE224K	BTS-220K	Feedback Network
R85	47KΩ 10%	½	RC20AE473K	BTS-47K	Phase Detector Plate
R86	100KΩ 10%	½	RC20AE104K	BTS-100K	Phase Detector Grid
R87	100KΩ 10%	½	RC20AE104K	BTS-100K	Phase Detector Cathode
R88	47KΩ 10%	½	RC20AE473K	BTS-47K	AGC Filter
R89	1.2KΩ 10%	½	RC20AE122K	BTS-1.2K	Horizontal Multivibrator Cathode
R90	270KΩ 10%	½	RC20AE154K	BTS-270K	Horizontal Multivibrator Grid
R91	27KΩ 10%	½	RC20AE273K	BTS-27K	Horizontal Multivibrator Plate
R92	470KΩ 10%	½	RC20AE474K	BTS-470K	AFC Filter
R93	56KΩ 10%	1	RC30AE563K	BTA-56K	Horizontal Multivibrator Decoupling
R94	270KΩ 10%	½	RC20AE274K	BTS-270K	Horizontal Multivibrator Plate
R95	22KΩ 10%	½	RC20AE223K	BTS-22K	Ringing Coil Shunt
R96	12KΩ 10%	½	RC20AE123K	BTS-12K	Horizontal Multivibrator Peaking
R97	470KΩ 10%	½	RC20AE474K	BTS-470K	Horizontal Output Grid
R98	150Ω 10%	1	RC20AE151K		Parasitic Suppressor
R99	100Ω 10%	2	RC40AE101M	BW-2-100	Horizontal Output Cathode
R100	100Ω 10%	2	RC40AE101M	BW-2-100	Horizontal Output Cathode
R101	5.6KΩ 10%	½	RC20AE562K	BTS-5.6K	Horizontal Linearity Shunt
R102	33KΩ 10%	½	RC20AE333K	BTS-33K	Horizontal Multivibrator Decoupling
R103	680KΩ	1	RC30AE684M	BTA-680K	HV Rectifier Load
R104	680KΩ	1	RC30AE684M	BTA-680K	HV Rectifier Load
R105	680KΩ	1	RC30AE684M	BTA-680K	HV Rectifier Load
R106	7.5KΩ	10	V-9600-3	1 3/4A-7500	Horizontal Output Screen (Wire Wound)
R107	220KΩ	1	RC30AE224M	BTA-220K	Isolation
R108	110Ω	5	V-6984-7		Surge Limiter Wire-Wound
R109A	50Ω	5	V-10576-1		Surge Limiter Wire-Wound
B	50Ω	5			Surge Limiter Wire-Wound See note 4.
R110	6.2Ω	1	V-10748-1	BW-1-8.2	Pilot Lamp Dropping
R111	680KΩ	1	RC30AE684M	BTA-680K	HV Rectifier Load
R112	2.2KΩ	½	RC20AE222K	BTS-2.2K	AGC Network
R115	50Ω	2			Parasitic Suppressor Note 5.
R114	100Ω	2			Parasitic Suppressor Note 5.
R115	1Meg 5%	½	RC20AE105K	BTS-1Meg	AGC Network
R116	470KΩ	½		BTS-470K	Veri. MV Plate See note 5.
R117	150Ω	½		BTS-150	Tone Compensation.

Note 1. Some models use a 47KΩ resistor in this application.
Note 2. Some models use 100KΩ resistors in this applications.
Note 3. Some models use 470KΩ reistor in this application.
Note 4. Not connected in all Models
Note 5. Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: WESTINGHOUSE Part No.	STANCOR Part No.	MERIT Part No.	CHICAGO Part No.
T1	117VAC	650VCT	5VAC	12.6VCT	V-9958-2		P-3066	PH-200
	②2.1A	.225ADC	③3A	④3.5A				

WESTINGHOUSE MODEL H-653K24
(Ch. V-2202-2 & V-2210-1)

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA WESTINGHOUSE PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA CHICAGO PART No.	NOTES
T2	190Ω Tapped @ 64Ω	13Ω Tapped @ .6Ω & 9.5Ω	V-10833-1				Horiz. Output Trans.
	SEC. 2	SEC. 3					
	0Ω	0Ω					
T3	640Ω	8Ω	V-6981-3	A-8112 ②	A-3038	TSO-5	Vert. Output Trans.
T4	485Ω		V-9253-4	FC-11 ①	MF-2 ①		Focus Coil
T5A	13Ω		V-10560-3	DY-8			Hor. Deflection Coils
B	49Ω						Vert. Deflection Coils

① Drill New Mounting Holes
② Drill One New Mounting Hole

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA Westinghouse PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA CHICAGO PART No.	INSTALLATION NOTES
T6	2KΩ	3.5Ω	230Ω	.8Ω	V-10288-1	A-3825 ②	A-2928	RO-2	② Drill One New Mounting Hole

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS V. C. IMP.	REPLACEMENT DATA Westinghouse PART No.	REPLACEMENT DATA JENSEN PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	275 Ω	3.5Ω	V-10544-1		10E275S	
	CONE DIA.	V. C. DIA.				
SP2	9½ in.	3/4 in.				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA Westinghouse PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA CHICAGO PART No.	INSTALLATION NOTES
L1	.225ADC	40Ω	1.4 Henries	V6471-2	C-2326 ②	C-2974 ②	TR-3300 ②	② Drill One New Mounting Hole

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA Westinghouse PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA IRC PART No.	NOTES
L2	Ant. Trans.	.1Ω	.1Ω				
L3	Ant. Coils	0Ω					
L4	Ant. Coil	0Ω					Channel 13
L5	RF Coil	0Ω					
L6	Mixer Grid Coil	0Ω					
L7	Osc. Coil	0Ω					Channel 13
L8	Osc. Coil	0Ω					Channel 6
L9	Fil. Choke	0Ω					
L10	Fil. Choke	0Ω					
L11	Conv. Plate	.1Ω					
L12	1st Video IF	0Ω		V-9881-2			
L13	41.25MC Sound Trap	0Ω		V-10586-1			
L14	Fil. Choke	0Ω		V-4886-2			
L15	Fil. Choke	0Ω		V-4886-2			
L16	2nd Video IF	.5Ω	.4Ω	V-9879			
L17	47.25MC Adj Sound Trap	0Ω		V-10771			
L18	3rd Video IF	.5Ω	.4Ω	V-9879			
L19	Fil. Choke	2.6Ω		V-9099-4		CL-1	3.9 Microhenries
L20	4th Video IF	.5Ω	.4Ω	V-9880			
L21	Noise Limiter	1.2Ω		V-4886-1			14Microhenries
L22	Peaking Coil	4.5Ω		V-9915-1			100Microhenries
L23	Sync. Coup	1.2Ω		V-4886-1	TV-181		14Microhenries
L24	Fil. Choke	0Ω		V-4886-2			
L25	4.5MC Trap	1.1Ω		V-9882-3			
L26	Peaking Coil	8.2Ω		V-5902-1	TV-151 TV-184		140Microhenries White Dot
L27	Peaking Coil	11.5Ω		V-9915-3	TV-185		250Microhenries Yellow Dot
L28	1st Sound IF	1.2Ω		V-9882-2	TV-151		
L29	2nd Sound IF	1.2Ω		V-9882-2	TV-151		
L30	Ratio Det. Trans.	3.9Ω	1.2Ω	V-9884	TV-110 TV-163		Tap @ 1.3Ω
L31	Horiz. Osc.	84Ω		V-6764			
L32	Width Coil	1Ω	95Ω	V-9902			
L33	Horiz. Lin.	20Ω		V-9960			
L34	Fil. Choke	2.2Ω		V-9099-5		CLA	2.7Microhenries
L35	Fil. Choke	2.2Ω		V-9099-5		CLA	2.7Microhenries

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA Westinghouse PART No. FUSE	REPLACEMENT DATA Westinghouse PART No. HOLDER	REPLACEMENT DATA LITTELFUSE PART No. FUSE	REPLACEMENT DATA LITTELFUSE PART No. HOLDER	REMARKS
M1	3AG	1Amp.	V-6171-7		318001		

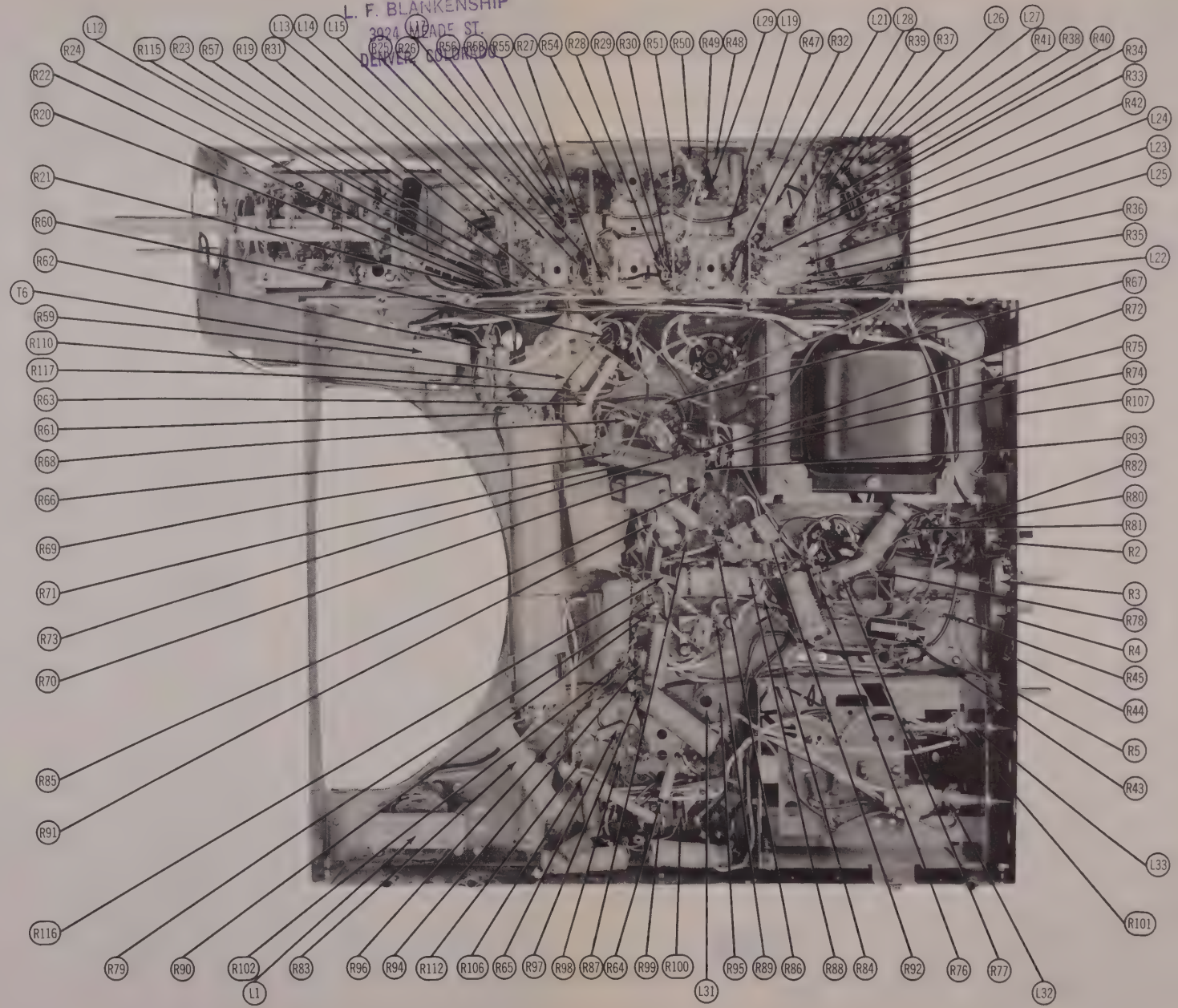
SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA Westinghouse PART No.	REPLACEMENT DATA SYLVANIA PART No.	REPLACEMENT DATA SELETRON PART No.	NOTES
M2	.145ADC	V-10575-1	ND-5	5P1	

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M4	RF Tuner	V-10805	Complete with tubes.
M5	Ion Trap	V-9784-3	
A9	Trimmer	V-9876	41.75 MC Trap (1.6-18MMF)
	Knob	V-10676-1	Channel Selector
	Knob	V-9940-1	Fine Tuning
	Knob	V-9938-1	Off/On Volume
	Knob	V-9938-2	Tone
	Knob	V-9939-1	Contrast
	Knob	V-6146-16	Horiz. Hold

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER COLORADO



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

GENERAL ELECTRIC

Electronic

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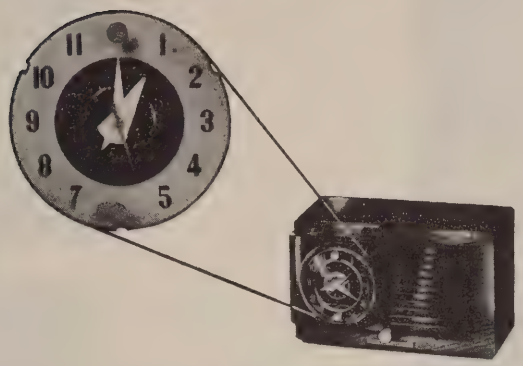

CLOCK PARTS REPLACEMENT GUIDE

RSM-3 No. 59 OCTOBER, 1951

INTRODUCTION: This publication contains information regarding clock radio clock parts replacement. Data contained herein covers all models manufactured since 1945. Features of this manual are:

1. **A CROSS REFERENCE** between radio model numbers and their respective clock assembly catalog numbers. These clock assemblies are manufactured by the Telechron division of the General Electric Company and bear G.E. and Telechron Catalog numbers. The clock parts, however, are listed under Telechron Catalog numbers only, with a few exceptions.
2. **A GROUP OF PHOTOGRAPHS** needed for identification purposes.
3. **A PARTS LIST** for each clock assembly. Grouped on these pages are two series of clock assemblies used. The first section is concerned with the C51 timers which have no "sleep" feature. The second section deals with the C57 timers which have a "sleep" feature. Bracketed ( ) items refer to production changes which are elaborated upon at the end of each parts section. Symbol numbers in the parts list refer to symbol numbers in the parts identification photographs.
4. **CLOCK RADIO CABINET REPLACEMENT GUIDE.** This section is devoted to data regarding cabinet considerations for late model clock radios which underwent production changes. Consult this section before attempting any clock radio cabinet replacements.

Inasmuch as radio parts and clock parts procurement procedures differ, we suggest that you contact your General Electric Distributor for assistance. In general, The Telechron service stations will be able to supply all clock parts as may be required for replacement purposes. However the complete clock assemblies are available from the General Electric Company as well as those few clock parts which are listed with G.E. catalog numbers only.

All clock assemblies are for 60 cycle, 105-125 volt operation unless otherwise noted.

CLOCK AND CLOCK RADIO CROSS REFERENCE LISTING

The following is a cross reference listing of Telechron Clocks used in G.E. radio receivers, including appearance item color identification.

G. E. Clock No.	Telechron Model No.	Used on Radio Models	Dial	Outer Ring or Bezel	Hour & Minute Hands	Sweep Second Hand	Alarm Disc	Knobs
RZC-001	C51 G2	G.E. 50	Ivory	Gold	Gold	Gold	Ivory	Ivory
RZC-003	C51 G2 (50 cycles)	G.E. 50 (50 cycles)	Ivory	Gold	Gold	Gold	Ivory	Ivory
RZC-005	C51 G4	G.E. 60, 62, 66, 67	Blue	Red	Ivory	Ivory	Maroon	Ivory
RZC-006	C51 G4 (50 cycles)	G.E. 60, 62 (50 cycles)	Blue	Red	Gold*	Gold*	Maroon	Ivory
RZC-009	C57 G2	G.E. 64, 65, 505, 506, 507, 508, 530, 515, 516, 517, 521, 522 and early production 515F, 516F, 517F, 521F, 522F (brass bezel)	Blue-grey	Gold	Luminous	Gold	Maroon	Ivory
RZC-010	C51 G7	G.E. 500, 501	Blue-grey	Gold	Luminous	Gold	Maroon	Ivory
RZC-011	C57 G9	G.E. 509, 511, 518F	Blue-grey	Chrome	White	Chrome	Maroon	White
RZC-012	C51 G10	G.E. 510, 511, 510F, 511F	Ivory	Gold	Maroon	Red	Gold	Ivory
RZC-013	C57 G22	G.E. 535	Grey	Gold	Luminous	Red	Ivory	Fawn
RZC-014	C51 G16	G.E. 512F	Purple	Fawn	Ivory	Red	Maroon	Fawn
RZC-015	C51 G17	G.E. 513F	Ivory	Ivory	Gold	Red	Maroon	Ivory
RCZ-017	C57 G31	G.E. 515F, 516F, 517F, late production (plastic bezel)	Blue-grey	Gold	Luminous	Gold	Maroon	Ivory
RZC-018	C57 G36	G.E. 518F late production (plastic bezel)	Grey	Silver	Luminous	Chrome	Maroon	White
RZC-019	C57 G38	Late 535 (sprayed steel bezel)	Grey	Fawn	Luminous	Red	Ivory	Fawn

*RZO-006 Hands may be supplied in either gold or ivory. When ordering, specify color.

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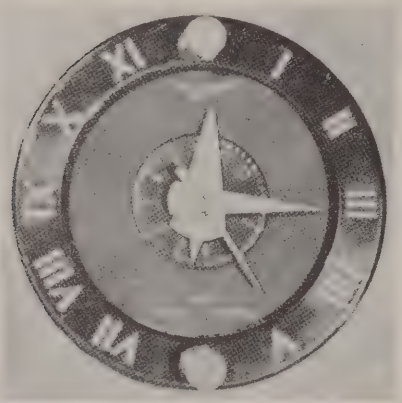

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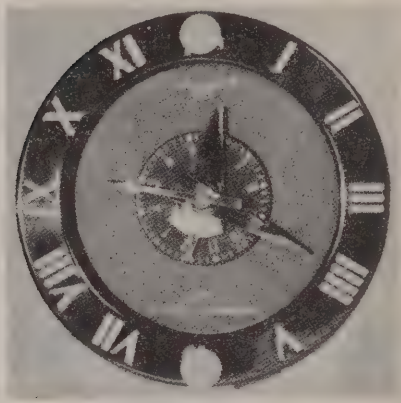

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RZC-010—Page 4

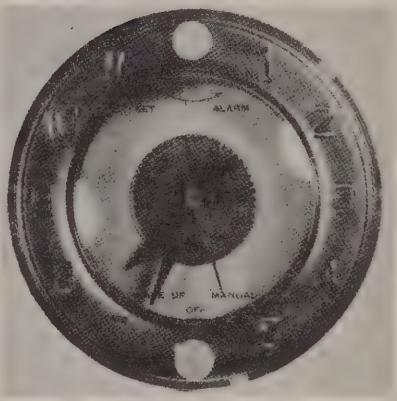

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Fig. 1. Front View of Clocks—"No Sleep" Feature (C51 Series)

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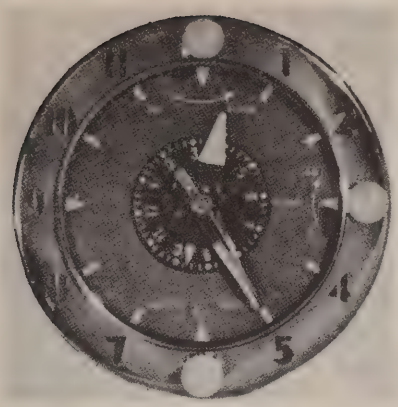
VER, COLORADO



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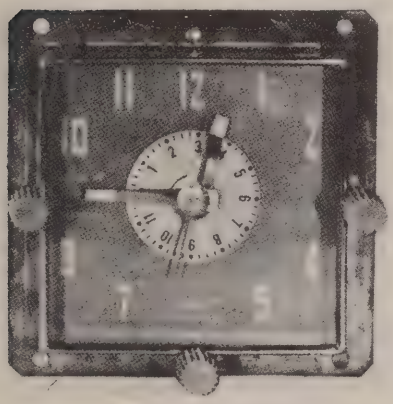

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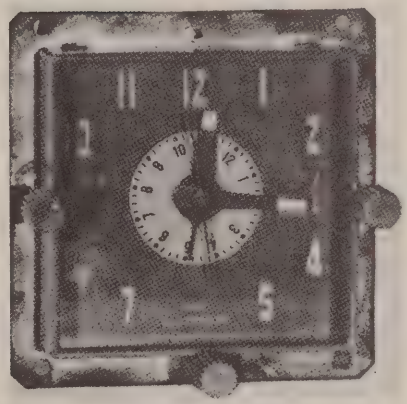

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Fig. 2. Front View of Clocks with "Sleep" Feature (C57 Series)

G.E. CAT. NO. RZC-001 (60 CYCLE) & RZC-003 (50 CYCLE)
TELECHRON CAT. NOS. C51G2 & C51G2 (50 CYCLE)

For Radio Model 50 (50 & 60 Cycle)

Description	Cat. No.	Symbol
APPEARANCE ITEMS		
Bezel—inner gold	53X107	
Crystal 2 9/16" square	58X15	
Dial	60X707	
Alarm disc	55X3	
Hour & minute hands—gold	32X129	
Sweep second hand—gold	31X26	
Alarm set knob—ivory (Threaded) (A)	4X5	
Alarm set knob—ivory (Slotted) (A)	59X716	
Switch knob—ivory	59X716	
Time set knob—bronze	3X49	
MOVEMENT PARTS		
Alarm set sleeve	15X3	17
Alarm set shaft (Old style) (B)	11X8	29
Alarm set shaft (Threaded) (A)	11X11	30
Alarm set shaft (Slotted) (A)	11X41	31
Base plate ass'y. (Friction) (C1)	35X39	21
Base plate ass'y. (Friction) (C2)	35X62	21
Cam shaft ass'y.	17X10	26
Cam shaft washer	40X252	25
Field & coil—60 cycle (.113 Hole) (A)	45X73	23
Field & coil—60 cycle (.128 Hole) (A)	45X209	23
MOVEMENT PARTS (Cont'd)		
Field & coil—50 cycle (.113 Hole) (A)	45X130	23
Field & coil—50 cycle (.128 Hole) (A)	45X210	23
Front plate ass'y. (.113 Hole) (A)	34X181	16
Front plate ass'y. (.128 Hole) (A)	34X229	16
Hour hand sleeve	13X11	18
Intermediate gear ass'y.	40X87	27
Minute Hand sleeve	14X17	19
Rotor unit (60 cycle)	44X38	22
Rotor unit (50 cycle)	44X39	22
Screw—front plate	64X1	24
Screw—field	1X117	13
Spreader post	40X201	14
Sweep second hand shaft	16X14	20
Switch contact ass'y. (C1)	40X76	2
Switch contact ass'y. (C2)	40X187	3
Switch contact ass'y. (C3)	40X322	4
Switch index spring (C2)	40X185	28
Switch lever ass'y.	40X88	12
Switch shaft ass'y. (C1)	59X699	6
Switch shaft ass'y. (C2)	59X723	7
Switch shaft ass'y. (C3)	59X776	8
Switch shaft spacer	40X275	5
Time set shaft	10X115	11
Time set shaft spacer—long	40X222	9
Time set shaft spacer—short	40X219	10
Wire lead	59X707	

G.E. CAT. NO. RZC-005 (60 CYCLE) & RZC-006 (50 CYCLE)
TELECHRON CAT. NOS. C51G4 & C51G4 (50 CYCLE)

For Radio Models 60, 62, 66, 67, 60 (50 Cycle) & 62 (50 Cycle)

Description	Cat. No.	Symbol
APPEARANCE ITEMS		
Bezel—numeral maroon	53X100	
Bezel—outer gold	54X29	
Bezel color ring—gold	59X234	
Crystal 2 9/16" round	58X16	
Dial	60X712	
Alarm disk	55X11	
Hour & minute hands—ivory*	32X205	
Sweep second hand—ivory*	31X62	
Alarm set knob—ivory (Threaded) (A)	4X5	
Alarm set knob—ivory (Slotted) (A)	59X716	
Switch knob—ivory	59X716	
Time set knob—bronze	3X36	
MOVEMENT PARTS		
Alarm set sleeve	15X3	17
Alarm set shaft (Old style) (B)	11X8	29
Alarm set shaft (Threaded) (A)	11X11	30
Alarm set shaft (Slotted) (A)	11X41	31
Base plate ass'y. (Friction) (C1)	35X39	21
Base plate ass'y. (Friction) (C2)	35X62	21
Cam shaft ass'y.	17X10	26
Cam shaft washer	40X252	25
Field & coil—60 cycle (.113 Hole) (A)	45X73	23
MOVEMENT PARTS (Cont'd)		
Field & coil—60 cycle (.128 Hole) (A)	45X209	23
Field & coil—50 cycle (.113 Hole) (A)	45X130	23
Field & coil—50 cycle (.128 Hole) (A)	45X210	23
Front plate ass'y. (.113 Hole) (A)	34X139	16
Front plate ass'y. (.128 Hole) (A)	34X227	16
Hour hand sleeve	13X11	18
Minute hand sleeve	14X17	19
Intermediate gear ass'y.	40X87	27
Rotor unit—60 cycle	44X38	22
Rotor unit—50 cycle	44X39	22
Screw—front plate	64X1	24
Screw—field	1X117	13
Spreader post	40X201	14
Sweep second hand shaft	16X14	20
Switch contact ass'y. (C1)	40X76	2
Switch contact ass'y. (C2)	40X187	3
Switch contact ass'y. (C3)	40X322	4
Switch index spring (C-2)	40X185	28
Switch lever ass'y.	40X88	12
Switch shaft ass'y. (C1)	59X699	6
Switch shaft ass'y. (C2)	59X723	7
Switch shaft ass'y. (C3)	59X776	8
Switch shaft spacer	40X275	5
Time set shaft	10X129	11
Time set shaft spacer—long	40X222	9
Time set shaft spacer—short	40X219	10
Wire lead	59X707	

*RZC-006 hands available in either ivory or gold—specify when ordering.

G.E. CAT. NO. RZC-010 TELECHRON CAT. NO. C51G7

For Radio Models 500, 501

Description	Cat. No.	Symbol
APPEARANCE ITEMS		
Bezel—numeral, gold	53X128	
Bezel color ring—red	59X769	
APPEARANCE TIMES (Cont'd)		
Crystal 2 9/16" round	58X16	
Dial	61X941	

G.E. CAT. NO. RZC-010 (Cont'd)
TELECHRON CAT. NO. C51G7

For Radio Models 500, 501

PROPERTY OF
L. F. BLANKENSHIP
3934 MEADE ST
DENVER, COLORADO

Description	Cat. No.	Symbol
APPEARANCE ITEMS (Cont'd)		
Alarm disc	55X15	
Hour & minute hands—luminous	32X199	
Sweep second hand—gold	31X26	
Alarm set knob—ivory (Threaded) (A)	4X5	
Alarm set knob—ivory (Slotted) (A)	59X716	
Switch knob—ivory	59X716	
Time set knob—bronze	3X36	
MOVEMENT PARTS		
Alarm set sleeve	15X3	17
Alarm set shaft (Threaded) (A)	11X11	30
Alarm set shaft (Slotted) (A)	11X41	31
Base plate ass'y. (Friction) (C2)	35X62	21
Cam shaft ass'y	17X10	26
Cam shaft washer	40X252	25
Field & coil, 60 cycle (.113 Hole) (A)	45X73	23
Field & coil, 60 cycle (.128 Hole) (A)	45X209	23

Description	Cat. No.	Symbol
MOVEMENT PARTS (Cont'd)		
Front plate ass'y. (.113 Hole) (A)	34X139	16
Front plate ass'y. (.128 Hole) (A)	34X227	16
Hour hand sleeve	13X11	18
Intermediate gear ass'y	40X87	27
Minute hand sleeve	14X17	19
Rotor unit, 60 cycle	44X38	22
Screw—Front plate	64X1	24
Screw—Field	1X117	13
Spreader post	40X201	14
Sweep second hand shaft	16X14	20
Switch contact ass'y. (C2)	40X187	3
Switch contact ass'y. (C3)	40X322	4
Switch index	40X185	28
Switch lever ass'y	40X88	12
Switch shaft ass'y. (C2)	59X723	7
Switch shaft ass'y. (C3)	59X776	8
Switch shaft spacer	40X275	5
Time set shaft	10X129	11
Time set shaft spacer—long	40X222	9
Time set shaft spacer—short	40X219	10
Wire lead	59X707	

G.E. NO. RZC-012, TELECHRON NO. C51G10

For Radio Models 510, 511, 510F and 511F

Description	Cat. No.	Symbol
APPEARANCE ITEMS		
Crystal-bezel combination	58X128	
Dial	61X954	
Alarm disc	55X31	
Hour & minute hands	32X257	
Sweep second hand—red	31X81	
Alarm set knob—ivory (Threaded) (A)	4X5	
Alarm set knob—ivory (Slotted) (A)	59X716	
Switch knob—ivory	59X716	
Time set knob—bronze	3X36	
MOVEMENT PARTS		
Alarm set sleeve	15X3	17
Alarm set shaft (Threaded) (A)	11X33	30
Alarm set shaft (Slotted) (A)	11X42	31
Base plate ass'y (Less friction)	35X101	21
Cam shaft ass'y	17X10	26
Cam shaft washer	40X252	25
Field & coil (.113 hole) (A)	45X73	23

Description	Cat. No.	Symbol
MOVEMENT PARTS (Cont'd)		
Field & coil (.128 hole) (A)	45X209	23e
Front plate ass'y (.128 hole) (A)	34X233	16
Front plate ass'y (.113 hole) (A)	34X234	16
Hour hand sleeve	13X11	18
Intermediate gear ass'y	40X87	27
Minute hand sleeve friction	14X32	19
Rotor unit M1630	44X38	22
Screw—front plate	64X1	24
Screw—field	1X117	13
Screw—switch contact	64X1	1
Spreader post	40X201	14
Sweep second hand shaft	16X14	20
Switch contact ass'y (C2)	40X187	3
Switch contact ass'y (C3)	40X322	4
Switch index spring (C2)	40X185	28
Switch lever ass'y	40X88	12
Switch shaft ass'y (C2)	59X742	7
Switch shaft ass'y (C3)	59X779	8
Switch shaft spacer	40X275	5
Time set shaft	10X141	11
Time set shaft spacer—long	40X222	9
Time set shaft spacer—short	40X219	10

G.E. NO. RZC-014, TELECHRON NO. C51G16

For Radio Model 512F

Description	Cat. No.	Symbol
APPEARANCE ITEMS		
Crystal-bezel combination	58X129	
Dial	61X957	
Dial spacer	59X772	
Alarm Disc	55X32	
Hour & minute hands—ivory	32X264	
Sweep second hand—red	31X81	
Alarm set knob—fawn (Slotted)	59X774	
Switch knob—fawn	59X774	
Time set knob—bronze	3X36	
MOVEMENT PARTS		
Alarm set sleeve	15X3	17
Alarm set shaft (Slotted)	11X43	31
Base plate ass'y (Less friction)	35X101	21
Cam shaft ass'y	17X10	26
Cam shaft washer	40X252	25
Field & coil 60-cycle	45X209	23

Description	Cat. No.	Symbol
MOVEMENT PARTS (Cont'd)		
Front plate ass'y (A)	34X235	16
Hour hand sleeve	13X11	18
Intermediate gear ass'y	40X87	17
Minute hand sleeve (Friction)	14X32	19
Rotor unit 60-cycle	44X38	22
Screw—front plate	64X1	24
Screw—field	1X117	13
Screw—switch contact	64X1	1
Spreader post	40X201	14
Sweep second hand shaft	16X14	20
Switch contact ass'y (C2)	40X187	3
Switch contact ass'y (C3)	40X322	4
Switch index spring	40X185	28
Switch lever ass'y	40X88	12
Switch shaft ass'y (C2)	59X773	7
Switch shaft ass'y (C3)	59X782	8
Switch shaft spacer	40X275	5
Time set shaft	10X158	11
Time set shaft spacer (long)	40X222	9
Time set shaft spacer (short)	40X219	10
Wire lead	59X707	

G.E. NO. RZC-015, TELECHRON NO. C51G17

For Radio Model 513F

Description	Cat. No.	Symbol
APPEARANCE ITEMS		
Crystal-bezel combination	58X129	
Dial	61X958	
Dial spacer	59X772	
Alarm disc	55X32	
Hour & minute hands	32X258	
Sweep second hands—red	31X81	
Alarm set knob—ivory (Slotted) (A)	59X716	
Switch—ivory	59X716	
Time set—bronze	3X36	
MOVEMENT PARTS		
Alarm set sleeve	15X3	17
Alarm set shaft (Slotted)	11X43	31
Base plate ass'y (Less friction)	35X101	21
Cam shaft ass'y	17X10	26
Cam shaft washer	40X252	25
Field & coil 60-cycle (A)	45X209	23
Front plate ass'y (A)	34X235	16
Hour hand sleeve	13X11	18
Intermediate gear ass'y	40X87	27
Minute hand sleeve (Friction)	14X32	19
Rotor unit 60-cycle	44X38	22
Screw—front plate	64X1	24
Screw field	1X117	13
Screw—switch contact	64X1	1
Spreader post	40X201	14
Sweep second hand shaft	16X14	20
Switch contact ass'y (C2)	40X187	3
Switch contact ass'y (C3)	40X322	4
Switch index spring (C2)	40X185	28
Switch lever ass'y	40X88	12
Switch shaft ass'y (C2)	59X773	7
Switch shaft ass'y (C3)	59X782	8
Switch shaft spacer	40X275	5
Time set shaft	10X158	11
Time set shaft spacer (Long)	40X222	9
Time set shaft spacer (Short)	40X219	10
Wire lead	59X707	

C51 PRODUCTION CHANGES

(A)

On 1951 production of C51 timers a slotted alarm set shaft will replace the present threaded one. This change will affect the following parts:

Alarm Set Shaft Assembly
Alarm Set Knob
Front Plate Assembly
Coil and Field Assembly

The alarm set shaft and knob will be slotted instead of threaded. The hole accommodating the alarm set shaft on the front plate and field bracket will be enlarged from .113 to .128.

(C1-2)

In 1948 the original switch shaft and switch contact assembly were redesigned to improve the switch indexing. The old style switch contact assembly (C-1) featured a bumped switch bracket which established contact with the copper locating springs on the switch shaft (C-1). The new style contact assembly, (C-2) has a smooth surface switch bracket. A bronze index spring seated on the two base plate posts which support the switch bracket, provides contact with the new switch shaft assembly (C-2). The following parts were affected:

	New (C-2)	Old (C-1)
*Switch Shaft	59X723	59X699
Switch Contact	40X187	40X76
Switch Index Spring	40X185	
Base Plate	35X62	35X69

(C-3)

In 1951 still further changes were made affecting the various switch shafts and switch contact assemblies. The composition cam on the switch shaft was redesigned and reduced to $\frac{3}{16}$ in. thickness or less than $\frac{1}{2}$ of the original size. The original composition cam was of black bakelite, the replacing cam of white nylon. The fibre arm of the switch contact assembly was redesigned to correspond with the cam change on the switch shaft.

The various combination of parts affected by all changes in switch indexing are shown below. (C-1) refers to the original assemblies which featured copper locating springs on switch shaft assemblies. (C-2) indicates the first change in indexing wherein a nickel cam replaced the locating springs on the switch shaft assemblies. The composition cams on these switch shafts were black bakelite. (C-3) indicates those parts affected by recent changes as outlined above. The reduced composition cams on the switch shaft assemblies are currently manufactured of white nylon. Parts affected by these changes are:

	C1	C2	C3
*Switch Shaft	59X699	59X723	59X776
Switch Contact	40X76	40X187	40X322
Base Plate	35X69	35X62	
Index Spring		40X185	

*Catalog number will vary in accordance with shaft length.

C57 SERIES

G.E. CAT. NO. RZC-009, TELECHRON NO. C57G2

For Radio Models 64, 65, 505, 506, 507, 508, 530, 515, 516, 517, 521, 522, and Early Production 515F, 516F, 517F, 521F, and 522F

Description	Cat. No.	Symbol
APPEARANCE ITEMS		
Bezel—numeral, gold	53X117	
Bezel—outer gold	54X31	
Bezel color ring—red	59X247	
Crystal—2$\frac{1}{16}$" round	58X16	
Dial	61X937	
Alarm disc	55X15	
Hour & minute hands (Luminous)	32X199	
Sweep second hand—gold	31X26	
Alarm set knob—ivory (Threaded) (A)	4X5	
Alarm set knob—ivory (Slotted) (A)	59X716	
Sleep switch—ivory	59X716	
Radio switch—ivory	59X716	
Time setbronze	3X36	
MOVEMENT PARTS		
Alarm set sleeve	15X3	17
Alarm set shaft (Threaded) (A)	11X11	32
Alarm set shaft (Slotted) (A)	11X41	33
Base plate ass'y	35X93	23
Cam shaft ass'y	17X10	28
Cam shaft washer	40X252	27
Field & coil 60-cycle (.113 hole) (A)	45X73	25
Field & coil 60-cycle (.128 hole) (A)	45X209	25
Field screw	1X117	12
Front plate ass'y (.113 hole) (A)	34X173	16
Front plate ass'y (.128 hole) (A)	34X221	16
Front plate screw	64X1	26
Hour hand sleeve	13X11	18
Intermediate gear ass'y	40X87	29
Minute hand sleeve	14X32	20
Rotor unit 60-cycle	44X38	24
Sleep switch shaft	40X277	35
Sleep switch booster spring	40X302	31
Sleep switch lever ass'y	40X194	30
Sleep switch friction ass'y	40X196	34
Spreader post (2)	40X201	13
Sweep second hand shaft	16X14	22
Switch contact ass'y (Old) (A)	40X198	6
Switch contact ass'y (New) (B)	40X322	7
Switch contact screw	64X1	5
Switch index spring	40X185	11
Switch lever ass'y	40X197	4
Switch shaft ass'y (Old) (A)	59X723	2
Switch shaft ass'y (New) (B)	59X776	3
Switch shaft spacer	40X275	1
Time set shaft	10X144	8
Time set shaft spacer	40X276	9
Wire lead	59X707	15

G.E. NO. RZC-011, TELECHRON NO. C57G9

For Radio Models 509, 518 and 518F

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

Description	Cat. No.	Symbol
APPEARANCE ITEMS		
Bezel—chrome numeral	53X134	
Bezel—outer chrome	54X34	
Bezel color ring—white	59X750	
Crystal $2\frac{1}{16}$" round	58X16	
Dial	61X946	
Alarm disc	55X15	
Hour & minute hands—white	32X227	
Sweep second hand—chrome	31X70	
Alarm set knob—white (Threaded) (A)	3X53	
Alarm set knob—white (Slotted) (A)	59X751	
Sleep switch—white	59X751	
Radio switch—white	59X751	
Time set knob—bronze	3X36	
MOVEMENT PARTS		
Alarm set sleeve	15X3	17
Alarm set shaft (Threaded) (A)	11X11	32
Alarm set shaft (Slotted) (A)	11X41	33
Base plate ass'y	35X93	23
Cam shaft ass'y	17X10	28
Cam shaft washer	40X252	27
Field & coil 60-cycle (.113 hole) (A)	45X73	25

Description	Cat. No.	Symbol
MOVEMENT PARTS (Cont'd)		
Field & coil 60-cycle (.128 hole) (A)	45X209	25
Field screw	1X117	12
Front plate ass'y (.113 hole) (A)	34X173	16
Front plate ass'y (.128 hole) (A)	34X221	16
Front plate screw	64X1	26
Hour hand sleeve	13X11	18
Intermediate gear ass'y	40X87	29
Minute hand sleeve	14X32	20
Rotor unit 60-cycle	44X38	24
Sleep switch shaft	40X277	35
Sleep switch booster spring	40X302	31
Sleep switch lever ass'y	40X194	30
Sleep switch friction ass'y	40X196	34
Spreader post (2)	40X201	13
Sweep second hand shaft	16X14	22
Switch contact ass'y (old) (A)	40X198	6
Switch contact ass'y (new) (B)	40X322	7
Switch contact screw	64X1	5
Switch index spring	40X185	11
Switch lever ass'y	40X197	4
Switch shaft ass'y (old) (A)	59X723	2
Switch shaft ass'y (new) (B)	59X776	3
Switch shaft spacer	40X275	1
Time set shaft	10X141	8
Time set shaft spacer	40X276	9
Wire lead	59X707	15

G.E. CAT. NO. RZC-013, TELECHRON NO. C57G22

Early Model 535

Description	Cat. No.	Symbol
APPEARANCE ITEMS		
Bezel—plain gold	53X146	
Crystal—special	58X125	
Dial 61	61X949	
Dial spacer	59X758	
Alarm disc	55X20	
Hour & minute hands (Luminous)	32X241	
Sweep second hand—red	31X76	
Alarm set knob		
Sleep switch knob		
Radio switch knob		
Time set knob—bronze	3X36	
MOVEMENT PARTS		
Alarm set sleeve	15X3	17
Alarm set shaft—slotted	11X35	33
Base plate ass'y	35X93	23
Cam shaft ass'y	17X10	28
Cam shaft washer	40X252	27
Field & coil 60-cycle (A)	45X209	25

Description	Cat. No.	Symbol
MOVEMENT PARTS (Cont'd)		
Field screw	1X117	12
Front plate ass'y	34X218	16
Front plate screw	64X1	26
Hour hand sleeve	13X11	18
Intermediate gear ass'y	40X87	29
Minute hand sleeve	14X32	20
Rotor unit 60 cycle	44X38	24
Sleep switch shaft	40X306	35
Sleep switch booster spring	40X302	31
Sleep switch lever ass'y	40X194	30
Sleep switch friction ass'y	40X196	34
Spreader post (2)	40X201	13
Sweep second hand shaft	16X14	22
Switch contact ass'y. (old) (A)	40X198	6
Switch contact ass'y. (new) (B)	40X322	7
Switch index spring	40X185	11
Switch lever ass'y	40X197	4
Switch shaft ass'y. (old) (A)	59X759	2
Switch shaft ass'y. (new) (B)	59X781	3
Switch shaft spacer	40X275	1
Time set shaft	10X150	8
Time set shaft spacer	40X276	9
Wire lead	59X707	15

G.E. NO. RZC-017, TELECHRON NO. C57G31

For Radio Models 515F, 516F, 517F (Late Productions)

The above clock assembly is identical to G.E. Cat. No. RZC-009, Telechron Cat. No. C57G2 with the following exceptions. *Note that there are two additional items. Listed below are C57G31 part catalog numbers for comparable C57G2 items.

Description	Cat. No.
Bezel—numeral, gold	53X123
*Bezel spacer	59X788

(Cont'd)

Description	Cat. No.
Dial	61X983
Sweep second hand	31X81
*Speed nut (A)	1X119
Front plate ass'y	34X250
Sleep switch shaft	40X308
Switch shaft ass'y	59X780

G.E. NO. RZC-018, TELECHRON NO. C57G36

For Radio Model 518F (Late Production)

The C57G36 timer is similar to the C57G31 with the exception of the bezel which is chrome finished plastic. This bezel number is 53X158.

G.E. CAT. NO. RZC-019, TELECHRON CAT. NO. C57G38

Late Model 535

The C57G38 timer is similar to the C57G22 timer (RZC-013) with the exception of the polished brass bezel which was replaced by one of sprayed fawn, Catalog number 53X159.

C57 PRODUCTION CHANGES

(A & B)

In 1951 the original switch shaft and switch contact assembly were redesigned. The original switch shaft (A) utilized a black bakelite cam, whereas the new switch shaft cam is made of white nylon. The cam on the new shaft (B) was reduced to $\frac{3}{16}$ in. thickness or less than one half the original size. The fibre arm on the switch contact assembly was redesigned to correspond with the cam change on the switch shaft.

The parts affected by the above are:

	(A)	(B)
*Switch shaft	59X723	59X776
Switch contact	40X198	40X322

* Catalog number will vary in accordance with shaft length.

CABINET CONSIDERATIONS FOR VARIOUS TYPES OF CLOCKS

Some of the catalogued items are listed below for clarification and others are added, to conform with receiver production changes in regard to the clock assembly employed. Late production receivers use clocks RZC-017 and RZC-018 employing an outer bezel and numeral bezel molded in a one piece plastic unit, while earlier receivers use clocks RZC-009 and RZC-011 (listed in ER-S-510F) using separate items of brass for the outer clock mounting bezel and numeral bezel. It is to be noted that the detail in the clock mounting hole in the original cabinet for each receiver model was also changed to accommodate the later clock using the plastic bezel. Therefore, the listing below should be carefully consulted for selection of the replacement part, in regard to the proper combination of cabinet and clock. All four clocks are 60-cycle, 105-125-volt assemblies having a round face and arabic numerals and employ an automatic alarm and sleep control.

Exercise care in removal of plastic bezels to prevent breakage of plastic tabs.

Cat. No.	Description
RAU-338	CABINET—Color, brown mottle; for Models 515, 515F; use brass bezel clock RZC-009
RAU-339	CABINET—Color, ivory; for Models 516, 516F; use brass bezel clock, RZC-009
RAU-340	CABINET—Color, maroon; for Models 517, 517F; use brass bezel clock, RZC-009
RAU-341	CABINET—Color, white; for Models 518, 518F; use chrome finish brass bezel clock, RZC-011
RAU-356	CABINET—Color, brown mottle; for Model 515F; use plastic bezel clock, RZC-017
RAU-357	CABINET—Color, ivory; for Model 516F; use plastic bezel clock, RZC-017
RAU-358	CABINET—Color, maroon; for Model 517F; use plastic bezel clock, RZC-017
RAU-359	CABINET—Color, white; for Model 518F; use plastic bezel clock, RZC-018
RZC-009	CLOCK—With polished brass bezels; for Models 515, 515F; 516, 516F; 517, 517F, using cabinets RAU-338, RAU-339, RAU-340
RZC-011	CLOCK—With chrome finished brass bezels; for Models 518, 518F using cabinet RAU-341
RZC-017	CLOCK—With gold finished plastic bezel; for Models 515F, 516F, 517F using cabinets RAU-356, RAU-357, RAU-358
RZC-018	CLOCK—With silver finished plastic bezel; for Model 518F using cabinet RAU-359

ALARM AND SWITCH ADJUSTMENTS

1. Turn Wake-Up Manual shaft to WAKE UP position.
2. Slowly rotate Time Set shaft clockwise until the contacts of the Switch Assembly close.
3. Set all Hands so that they indicate 12 o'clock. Set figure 12 of the alarm dial to index with the smaller pointer of the hour hand. Make sure all Hands and Alarm Dial are tight on their respective shafts. Replace Dial Face.
4. With Alarm Set knob pulled out, continue to rotate Time Set shaft clockwise and note that the Alarm vibrator arm drops against field core approximately 7-10 minutes later.
5. Set alarm at some other selected position and make sure mechanism actuates within limits (±1 minute).
6. Check alarm tone of vibrator. This can be adjusted by either bending vibrator arm nearer or farther away from field core. Bend arm near anchor point.

NOTE: When removing gears or other internal parts of clock mechanism, always start the disassembly process from the front (face) side of clock and work toward the rear.

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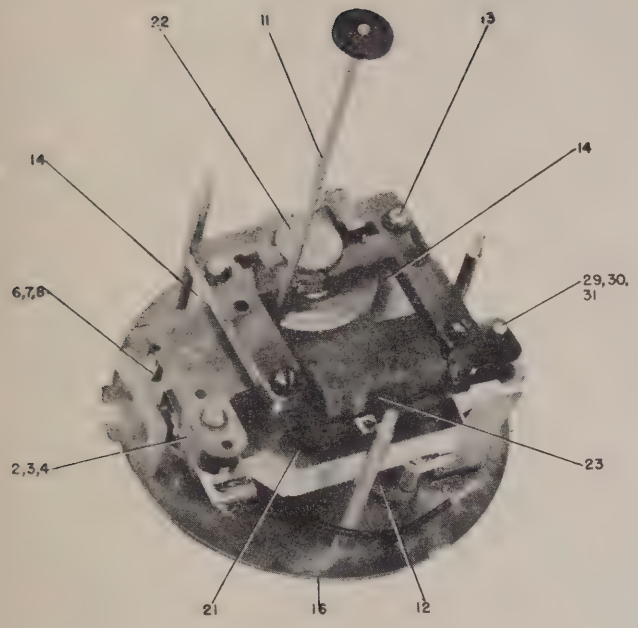

Fig. 3. Back View of C51 Clocks

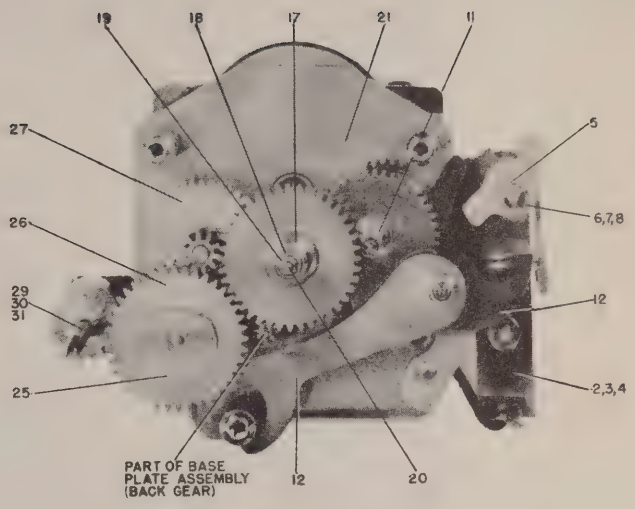

Fig. 4. Front View of C51 Clocks—Front Plate Removed

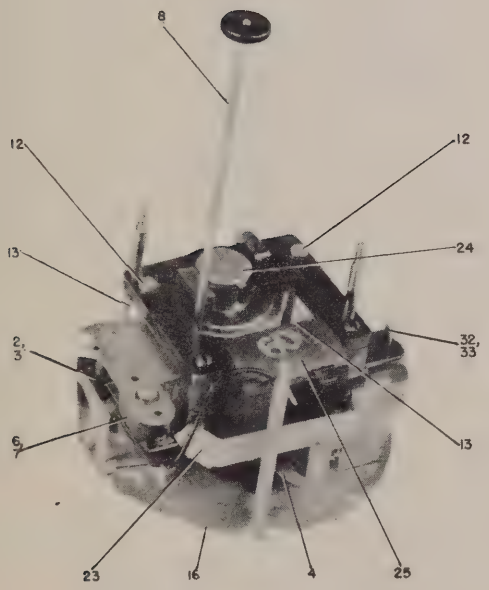

Fig. 5. Back View C57 Clocks

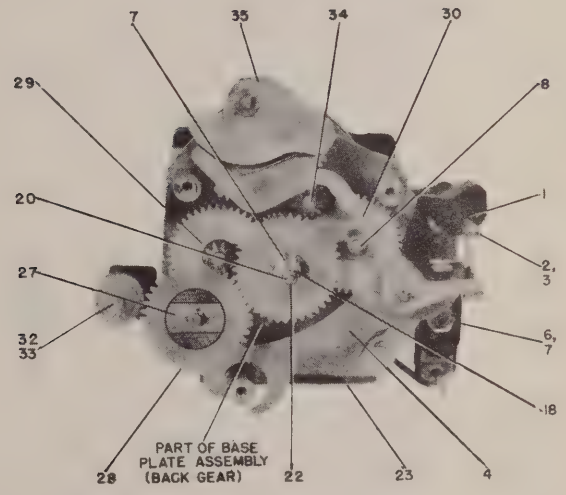

Fig. 6. Front View C57 Clocks—Front Plate Removed

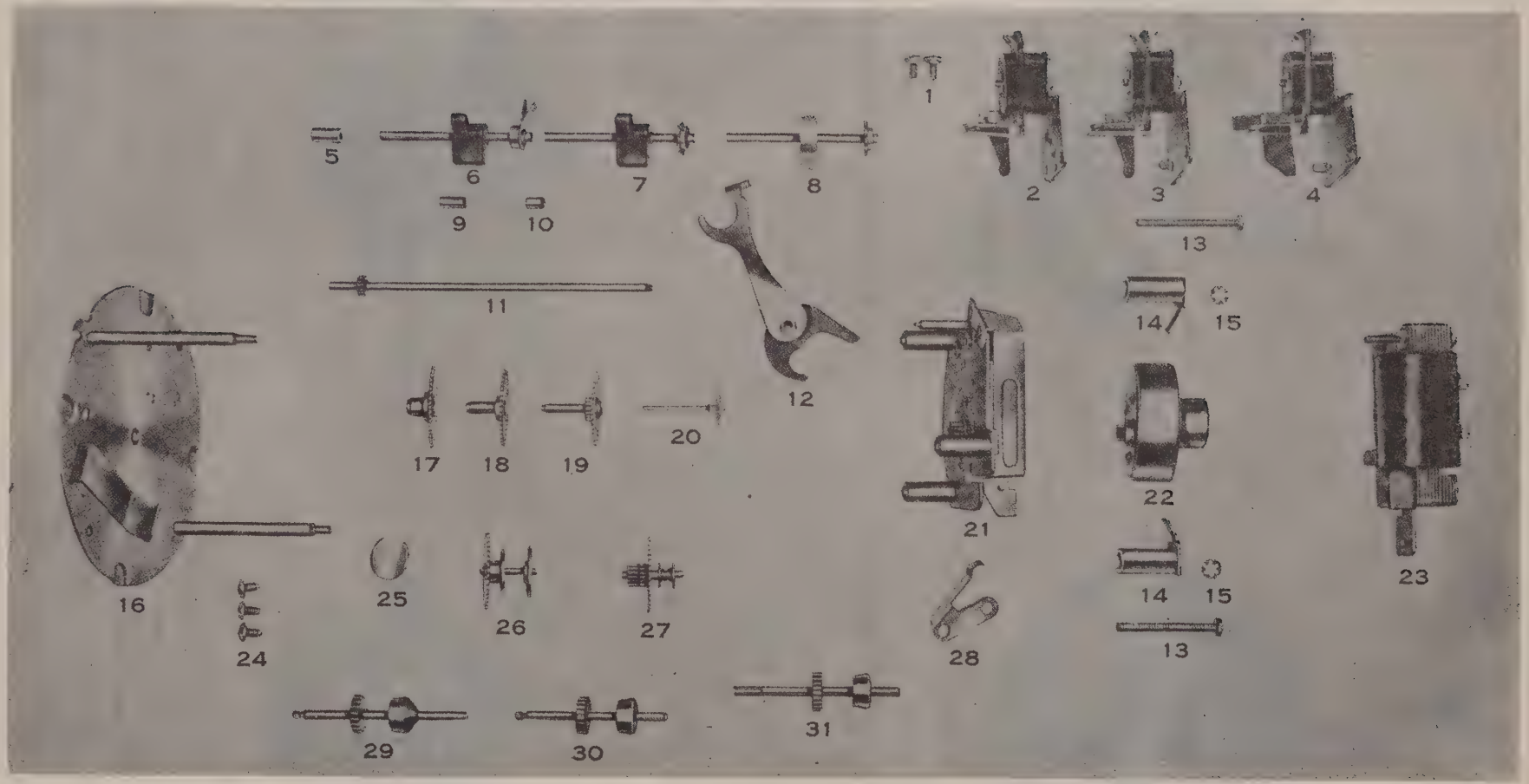

Fig. 7. Exploded View of C51 Series Clock Movement

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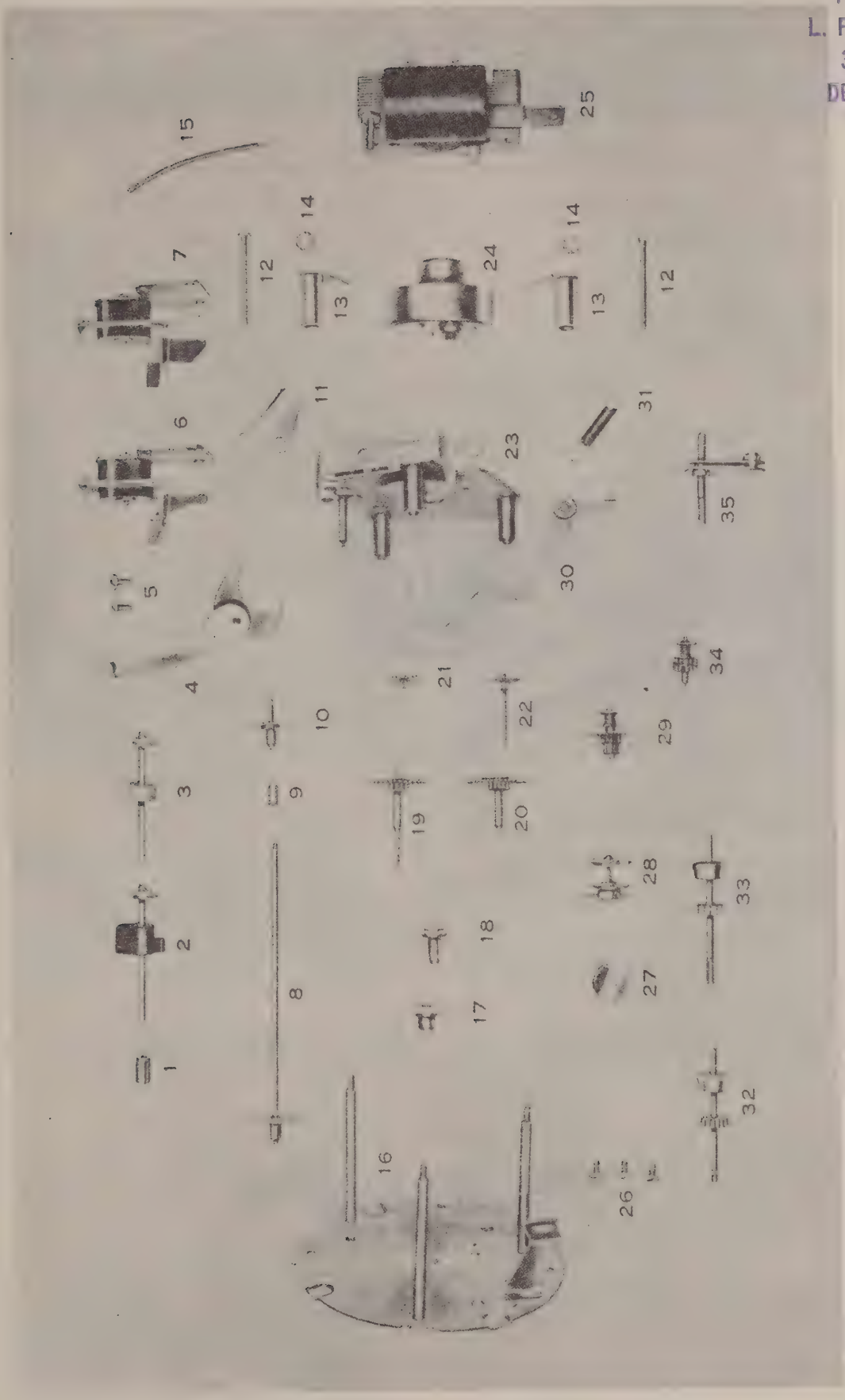

Fig. 8. Exploded View of C57 Series Clock Movement

GENERAL ELECTRIC COMPANY
RECEIVER DEPARTMENT
ELECTRONICS PARK
SYRACUSE, NEW YORK, U.S.A.
PRINTED IN U.S.A.

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ADO

The PHOTOFACT Servicer

February 1, 1952 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ Vol. 16, Nos. 159 & 160

BONUS FOLDER

In your PHOTOFACT Folder Set No. 160, we are including a 12-page Folder covering General Electric and Telechron clocks, which have been used as timers in many manufacturers' clock radios. All clocks are identified by photographs, with call-outs. Exploded views are also shown to permit disassembly for replacement purposes.

A complete parts list on each model gives the parts information for both appearance items and movement parts.

We are certain that this supplementary information will be helpful to you.

* * *

TRADE NEWS

Cornell - Dubilier has issued a new Television Capacitor Replacement Guide which is available from your distributor. Because of its interest and the importance of using the latest catalog numbers we are reproducing pages 31 and 32 of this guide on subsequent pages of this Servicer. The listing is a cross-reference between old and new numbers and should be used when ordering C-D replacement units.

* * *

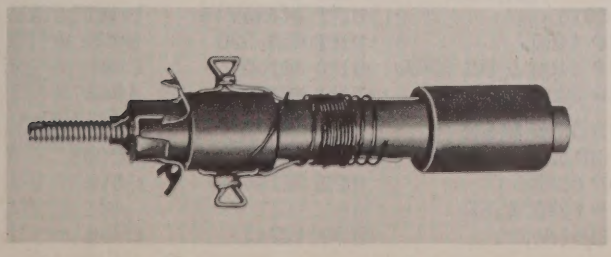
Grayburne Variable "Loopstick"

Grayburne Corporation announces a new companion to the now popular Ferri-Loopstick, the Grayburne Vari-Loopstick. The new Vari-Loopstick has all the advantages of the Ferri-Loopstick and the added feature of micrometer adjustment.

This added feature is for those servicemen and the hobbyists who are "Station Jumpers" and "DX Hounds" and for those who want to peak resonate for a series of stations at will.

Both the Ferri and Vari-Loopstick will more effectively replace older type loops in any broadcast receiver.

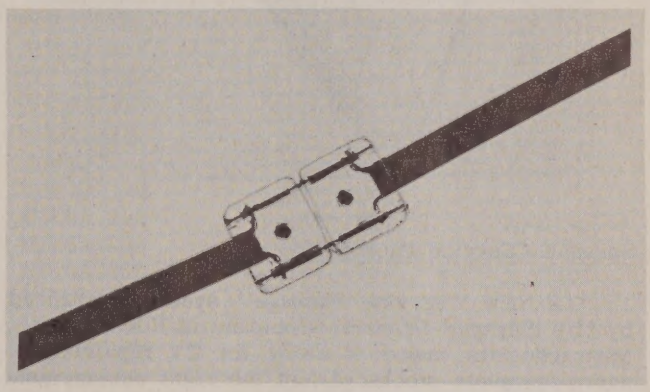
This new unit is pictured herewith.



Insuline Corp. of America (ICA) has introduced a new connector which makes possible rapid connecting and disconnecting of flat twin-lead television wire.

Made of low-loss transparent plastic, the connector consists of two separable sections each an inch square and 1/4 inch thick, with solderless screw type terminals on the plug and jack members. Introduction of the connector into the line does not change the latter's characteristics.

This item, which carries the Insuline catalog number 6172, is illustrated.



* * *

Rauland Announces 27" Metal Tube

Rauland Corporation, Chicago, has announced production of a new 27" rectangular picture tube with an extremely short metal-coned envelope.

The new tube, known as type 27QP4, is a rectangular electro-static-focus, magnetic-deflection, direct view tube. It is shorter from face to back than a standard 20" tube by reason of using 90° deflection.

The screen of this new tube provides a picture area of approximately 390 square inches, about 40 square inches bigger than the center spread of a tabloid newspaper.

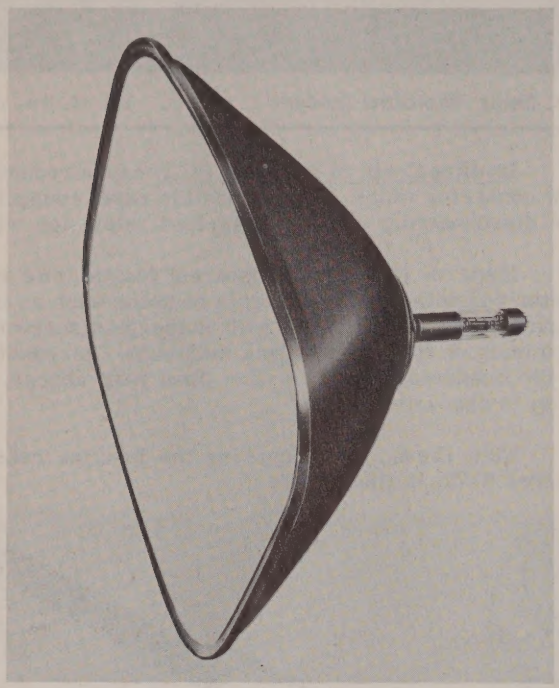
The face plate of the tube is absorbent gray filter glass like that of the "black face" tube originated by Rauland. It is treated so that reflections from inner and outer surfaces is 97-1/2% eliminated.

The tube employs Rauland's well-known Indicator Ion Trap Tilted Offset electrostatic gun with new "fine-line Focus." Fine-line Focus, the result of several improvements in gun design gives a brighter picture with 28% more "picture elements." It gives picture definition which is better both vertically and horizontally than before. It gives detail in the corners of the picture as good or better than that in the sharpest center area of previous tubes.

The 27QP4 can be used as a zero-voltage focus or can be focused to maximum sharpness with low-

voltage supply from the set's regular power supply. A single external magnetic field must be used in conjunction with the indicator ion trap to prevent ion spot blemish.

A photograph of this new tube is shown.



* * *

Sprague "Service Packages"

A new "Service Package" system announced by the Sprague Products Company of North Adams, Massachusetts, makes it easy for TV repairmen to carry complete stocks of just the right replacement capacitors for the brands of TV sets they service most frequently. Sprague distributors now have available complete "Service Packages" of all the electrolytic capacitors necessary to service each of 22 of the most popular makes of TV receivers in use today, thus enabling servicemen to give prompt repair service without loss of time or unnecessary seldom-needed capacitor values.

A complete listing of the capacitors recommended for inclusion in the "Service Package" for each brand of TV set is included in the new brown-covered 4th edition of the Sprague TV Replacement Capacitor Manual, M-481, available free through Sprague distributors, or directly from Sprague for 10¢ to cover handling and mailing costs.

* * *

ALPRODCO Announces New Rotator Adaptor Kit

A new rotator adaptor kit, designed to make possible the installation of any commercial antenna rotators on its antenna towers, has just been announced by Alprodco Inc. Claimed to be quickly and easily installed, without special tools, the kit consists of four matched components.

According to the manufacturer, the rotator adaptor kit, called the RK-1W, is the answer to many requests for a low cost method of connecting any of the more popular rotators to its line of antenna towers. It has been given extensive tests in TV fringe areas, both as to ease of assembly and durability of operation, and after passing these tests is now being placed on the market.

The kit consists first of an adaptor mounting plate, predrilled to accomodate any well-known rotator, upon which the rotator is mounted. This is placed within the framework of the tower itself. A ten-foot mast pole is provided to connect the antenna to the rotator; this pole is held securely within a 24-inch bearing, third component in the kit. Lastly, a three-piece mast kit is included, affording the rigid support necessary to keep the mast pole bearing in place. It eliminates costly rotator repairs by giving maximum protection to the rotator. All of the wind thrust is absorbed by the tower.

Full-scale production of the rotator adaptor kit, latest item in the popular Alprodco line of TV antenna accessories, is now under way. It will shortly be available through jobbers. Additional information and literature may be obtained by writing direct to the manufacturer, Alprodco Inc., Kempton, Indiana, Mineral Wells, Texas, or Dublin, Georgia.

LISTING OF CORNELL-DUBILIER RECOMMENDED REPLACEMENT PART NUMBERS AND NEW RECOMMENDED REPLACEMENT PART NUMBERS.

Original No. Recommendation	New No. Recommendation	Rotational Stock No.
EDJ 10106	UPT 4445-415	C110
EDJ 10118	UPT 4445	B045
EDL 8D45 (2)	UPT 111145	D009
EZ 10090	UPT 11145V15	D050
EZ 10095	UPT 200	B055
EZ 10114	UPT 111145	D009
KR 540	UPT 4045	A048
UP 1145	UPT 1145	B037
UP 1145	UP 1150	B049
UP 1145	UP 11145	C024
UP 2025	UP 1535	A036
UP 3050	UPE 3050	XA013
UP 3145	UPT 3145	B041
UP 3315	UP 6015	A021
UP 3345 & BRH 251A	UPT 409	D078
UP 3345	UPT 33245	C029
UP 4015	UPE 4015	XA001
UP 4025	UPE 4025	XA008
UP 4045	UPT 4045	A048
UP 4045	UP 4050	A055
UP 4245	UP 6045	A050
UP 4445	UPT 4445	B045
UP 4445	UP 4450	B053
UP 4445 & BRH 5015	UPT 44435V15	D047
UP 4450	UPT 450-520	B075
UP 4450 & BR 850A	UPT 44150	C041
UP 5030	UPT 4045	A048
UP 5515 & BR 3015A	UPE 55515	XC003
UP 6245	UPT 62130	C019
UP 6245 & BR 2045A	UPT 62245	C036

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Original No. Recommendation	New No. Recommendation	Rotational Stock No.
UP 8015	UPE 8015	XA002
UP 8015	UPT 8015	A023
UP 8030	UP 3335	B031
UP 8045	UPE 8035	XA011
UP 8050 & BR 505	UPT 8050V5	B077
UP 8445	UPT 6640	B034
UP 11145	UP 11150	C038
UP 32245 & BR 3045A	UPT 332240	D005
UP 41145	UPT 41145	C032
UP 42215	UPE 42215	XC002
UP 44415	UPE 55515	XC003
UP 44445	UPT 44445	C035
UP 55315	UPE 55515	XC003
UP 62245	UPT 62245	C036
UP 84215	UPE 15015	XA004
UP 84245	UPT 84245	C037
UP 111145	UPT 206	B042
UP 111145	UPT 3145	B041
UP 111145	UPT 4Q45	D007
UP 111145	UPT 111135	D003
UP 111145	UPT 111145	D009
UP 111145	UPT 111150	D018
UP 111145 & BRH 501	UPT 11145V15	D050
UP 222245	UPT 222245	D013
UP 421145	UPT 421145	D017
UP 442130	UPT 442130	D002
UP 444315	UPE 8815	XB005
UPT 150-4445	UPT 44150	C041
UPT 155C	UPT 205	B007
UP 3335C	UP 3345	B043
UP 4445C	UPT 4435C5	C087
UP 11145C	UPT 11145C	D048
UP 43145C	UPT 400	D056
UP 43145C	UPT 42125	C015
UP 43145C & BRH 501	UPT 42145V10	D062
UP 55515C	UPT 12615C	C062
UP 8445C10	UPT 8445C10	C111
UP 2245CC	UP 3345V4	C103
UP 4CJ1	UP 22215	C004
UP 4CJ3	UP 15D25C	C065
UP 4CJ5	UP 1135C	C075
UP 1AJ22	UP 40-25	A009
UP 1AJ24	UP 3015	A018
UP 1AJ26	UP 2025	A027
UP 4AJ10	UP 3025	A028
UP 4AJ18	UP 1545	A045
UP 4AJ23	UP 100-25	A010
UP 4AJ25	UP 5015	A020
UP 4BJ36	UP 15D35	B029
UP 4CJ43	UP 222-25	C001
UP 4CJ58	UP 2215X10	C044
UP 4CJ59	UP 4215X10	C050
UP 4CJ62	UP 4215X10	C050
UP 4CJ65	UP 4215C10	C049
UP 6AJ30	UP 5035	A039
UP 6BJ34	UP 5515	B016
UP 6BJ38	UP 2245	B040
UP 6CJ12	UP 1145C	C091
UP 6CJ18	UP 11145	C024
UP 6CJ21	UP 3325C	C067
UP 6CJ41	UP 5515C	C058
UP 6CJ44	UP 44415	C009
UP 6CJ47	UP 15D145	C025
UP 6CJ60	UP 2215X25	C045
UP 6CJ61	UP 4215X25	C053
UP 6CJ62	UP 4215X10	C050
UP 6CJ64	UP 5315C10	C057
UP 7B212	UPT 6620	B019
UP 7DJ19	UP 44315C	D024
UP 7DJ54	UPT 111145	D009
UP 7DJ63	UP 44415C10	D026
UP 9AJ31	UP 12535	A041
UP 9AJ32	UP 8040	A042
UP 9BJ40	UP 8140	B035
UP 9DJ48	UP 55515C	D029
UP 9DJ53	UP 43145C	D064
UP 9DJ55	UP 2245-3335	D090
UP 9DJ56	UPT 42235C	D044
UP 9DJ56	UPT 222245	D013
UP 9D997	UPT 421145	D017
UP 1AJ217	UPT 102	A001
UP 4AJ136	UPT 100	A002
UP 4AJ947	UPE 4015	XA001
UP 4BJ241	UPT 4D45	B036
UP 5CJ879	UPT 1145V4	C092
UP 6AJ242	UPT 4045	A048
UP 6AJ292	UPE 3050	XA013
UP 6AJ333	UPE 10015	XA003
UP 6AJ333	UPE 15015	XA004
UP 6AJ827	UPE 3050	XA013
UP 6CJ123	UPT 2145V5	C097
UP 6CJ389	UPT 307	C130
UP 6CJ406	UPT 308	C119
UP 7AJ231	UPT 2M-6	A004
UP 7AJ274	UPT 111145	D009
UP 7AJ474	UPT 8015	A023
UP 7AJ474	UPE 8020	XA006
UP 7BJ304	UPT 245-1010	B069
UP 7BJ304	UPT 204	B067
UP 7BJ808	UPT 200	B055
UP 7BJ912	UPT 206	B042
UP 7BJ912	UPT 3150	B052
UP 7BJ920	UPT 445-135	B071
UP 7BJ934	UPT 202	B001
UP 7BJ934	UPT 203	B002
UP 7BJ942	UPT 11145C10	D049
UP 7BJ948	UPT 345-415	B070
UP 7BJ978	UPT 445-135	B071
UP 7CJ269	UPT 310	C120
UP 7CJ429	UPT 304	C125
UP 7CJ971	UPT 4235-110	C085
UP 7DJ825	UPT 111150	D018
UP 7DJ930	UPT 1145CC	D088
UP 7DJ945	UPT 111145	D009
UP 8AJ242	UPE 8035	XA011
UP 8CJ898	UPT 33245	C029
UP 8CJ898	UPT 301	C137
UP 8CJ983	UPT 41150	C040
UP 8DJ907	UPT 442130	D002
UP 8DJ933	UPT 410	D097
UP 8D1093	UPT 414	D070
UP 9AJ335	UPT 101	A003
UP 9BJ337	UPT 245-835	B068
UP 9BJ730	UPT 8050V5	B077

CORNELL - DUBILIER REPLACEMENT PART NUMBERS CONTINUED

Original No. Recommendation	New No. Recommendation	Rotational Stock No.
UP 9BJ857 & BRD 1145A	UPT 8145 & BRD 1145A	B047
UP 9BJ930	UPT 8045V5	B072
UP 9BJ993	UPT 12230	B028
UP 9BJ995	UP 4450	B053
UP 9CJ180	UPT 62130	C019
UP 9CJ180	UPT 2245-635	C100
UP 9CJ350	UPT 7725V2	C068
UP 9CJ390	UPT 33345	C030
UP 9CJ677	UPT 33245	C029
UP 9CJ729	UPT 4145-820	C105
UP 9CJ731	UPT 41145	C032
UP 9CJ884	UPT 345-540C4	C142
UP 9CJ887	UPT 300	C143
UP 9CJ897	UPT 44145	C034
UP 9CJ897	UPT 44150	C041
UP 9CJ913	UPT 445-9515	C126
UP 9CJ915	UPT 4145-820	C105
UP 9CJ990	UPT 64235	C023
UP 9CJ994	UPT 1030-615C	C129
UP 9DJ178	UPT 64230C5	D038
UP 9DJ674	UPT 400	D056
UP 9DJ784	UPT 408	D091
UP 9DJ826	UPT 407	D068
UP 9DJ914	UPT 61145-215	D067
UP 9DJ919	UPT 400	D056
UP 9DJ969	UP 33245C	D059
UP 9DJ984	UPT 15S33145	D010
UP 10C156	UP 15D45-130	C095
UP 4AJ1005	UPE 8015	XA002
UP 4BJ1057	UPT 205	B007
UP 4BJ1120	UPT 1145	B037
UP 4CJ1056	UPE 42215	XC002
UP 5CJ1212	UPT 318	C113
UP 6CJ1083	UP 11150	C038
UP 6CJ1089	UPT 3235C	C083
UP 6CJ1158	UPT 314	C127
UP 6CJ1199	UPT 1150V10	C112
UP 7AJ1060	UP 8035	A040
UP 7CJ1014	UPT 250-230C4	C146
UP 7CJ1041	UPT 245-4125	C124
UP 7CJ1048	UPT 306	C136
UP 7CJ1054	UPT 10120V4	C064
UP 7CJ1066	UPT 1145-510	C093
UP 7CJ1106	UPT 111145	D009
UP 7DJ1044	UPT 15735V5	D040
UP 7DJ1115	UPT 21145C10	D051
UP 8CJ1031	UPT315	C145
UP 8CJ1065	UPT 3150V2	C117
UP 8CJ1156	UPT 312	C139
UP 8DJ1092	UP 22150-130	D069
UP 8DJ1093	UPT 414	D070
UP 8DJ1112	UPT 211145	D012
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UP 9BJ1016	UPT 250-1030	B074
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UP 9BJ1038	UPE 150D15	XB007
UP 9CJ1002	UPT 303	C147
UP 9CJ1039	UPT 3245-315	C101
UP 9CJ1064	UPT 450-440V2	C148
UP 9CJ1084	UPT 32250	C039
UP 9CJ1085	UPT 44150	C041
UP 9CJ1100	UPT 4445C4	C108
UP 9CJ1169	UPT 4145V10	C104
UP 9CJ1214	UPT 303	C147
UP 9DJ1068	UPT 41145C25	D060
UP 9DJ1069	UPT 42145C	D061
UP 9DJ1070	UPT 44430-215	D037
UP 9DJ1076	UPT 401	D079
UP 9DJ1077	UPT 402	D072
UP 9DJ1157	UPT 421145	D017
UP 9DJ1160	UPT 42245CA	D063
UP 9DJ1161	UPT 417	D084
UP 9DJ1162	UPT 416	D100
UP 9DJ1176	UPT 44435C4	D046
UP 9DJ1310	UPT 417	D084
UP 10AJ932	UPT 10030	A034
UP 10AJ932	UPT 104	A035
UP 10B1059	UPT 201	B003
UP 11AJ935	UP 9050	A057
UP 11BJ922	UPT 650-815	B076
UP 11BJ976	UPT 25S450	B051
UP 11CJ835	UPT 33345	C030
UP 11CJ835	UPT 62245	C036
UP 11DJ991	UPT 404	D057
UP 11DJ931	UPT 4140-8125	D087
UP 11D1010	UPT 409	D078
UP 11D1195	UPT 403	D066
UP 10CJ1080	UPT 2150V10	C114
UP 11BJ1055	UPE 201515	XB008
UP 11BJ1055	UPE 202015	XB009
UP 11BJ1081	UP 4450	B053
UP 11CJ1043	UPT 88625	C017
UP 11CJ1043	UPE 88815	XC004
UP 11CJ1046	UPT 8440V15	C089
UP 11CJ1067	UPT 4445-415	C110
UP 11CJ1079	UPT 4145-820	C105
UP 11CJ1098	UPT 4445	C035
UP 11CJ1098 & BRH 251A	UPT 8445C10	C111
UP 11CJ1098 & BRH 251A	UP 84415C10	D033
UP 11CJ1098 & BRH 5015	UPT 44435V15	D047
UP 11CJ1126	UPT 4450-1020	C118
UP 11CJ1196	UPT 8825-145	C069
UP 11CJ1244	UPT 305	C121
UP 11CJ1257	UPT 36145	C031
UP 11DJ1010	UPT 15S33345	D011
UP 11DJ1047	UPT 811135	D004
UP 11DJ1170	UPT 44145V2	D065
UP 11DJ1171	UPT 415	D036
UP 11DJ1194	UPT 44145V2	D065
UP 13CJ1167	UPT 84245	C037
UP 13CJ1192	UPT 4450-1020	C118
UP 13CJ1263	UPT 125430	C020
UP 13DJ1185	UPT 413	D098
UP 13DJ1186	UPT 412	D096
UP 14DJ1154	UPT 406	D094
UPE 5515	UPE 10015	XA003
UPE 20015	UPE 101015	XB006
UPE 55515	UPE 15015	XA004
UPE 8CJ30	UPT 302	C132
UPE 11CJ23	UP 4450 & BRH 125A	B053
UPE 13CJ20	UPE 1030-6225	XC010
UPE 13DJ13	UPT 405	D093
UPE 14CJ18	UPE 2020-2625	XC011